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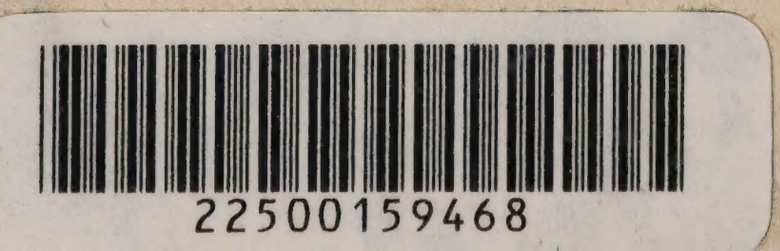

Louis W. Sambon

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THE

FOOD JOURNAL;

A REVIEW OF

Social and Sanitary Economy,

AND

Monthly Record of Food and Public Health.

"Appetite runs, whilst Reason lags behind."

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THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS ON THE ADULTERATION OF FOOD, ETC.—PART VI.

SIR H. F. HOWARD reports that the laws in BAVARIA provide that any person who sells food or drink knowing them to be adulterated with substances injurious to health is liable to imprisonment for two months, and may in addition be fined 1000 florins (83*l.* 6*s.* 8*d.*). Likewise, any person who adulterates food and drink with substances injurious to health, knowing that they are to be offered for sale, is liable to an imprisonment of two years to which may be added a fine not exceeding 400 florins. But if the adulterated substances are not injurious the punishment is simple arrest or a fine of 150 florins. Tradesmen or wholesale dealers in whose premises materials for adulteration or adulterated food itself are found are liable to the punishments detailed above.

Some stringent municipal regulations prevail respecting the sale of bread, beer, and milk at Munich. Every kind of bread exposed for sale by bakers or eating-house keepers is liable to inspection by specially appointed persons, and all bakers and dealers are obliged to allow the inspectors free access to their shops and business premises generally. The inspection commences at six o'clock a.m. in the summer and at seven a.m. in the winter. Both quality and weight are examined. All bread which is burnt, under-baked, which has not the proper admixture of salt, which is not made of the right kind of flour, or which appears to be in any way unwholesome, is liable to be seized, as well as all loaves not of the proper declared weight, *i.e.*, in which the deficiency amounts to more than half an ounce to an ounce in the pound (according to the weight of the loaf), although an allowance of double this deficiency is made for bread more than twenty-four hours old. Any infraction of these regulations is punishable by a fine not exceeding 25 florins (2*l.* 1*s.* 8*d.*).

Retailers of beer are not allowed to charge a higher price than that which is fixed for the time being by the official Beer Tariff.

If from any special causes they have permission to sell at a lower price than at that of the tariff, the official document granting this permission must be exposed in a prominent place on the premises. In those localities where special or fancy descriptions of beer—such as "Bock" or "Salvator," to which the tariff does not extend,—are sold, a table of prices must also be hung up. All beer must be duly served in stamped measures or jugs, and the use of beer fountains is prohibited. Beer which has been left by the guests in their glasses must not be returned to cask or be again served to customers. Beer intended for sale, together with the measures in which it is served, is under the supervision of the municipal Inspectors. As in the case of bread a fine of 25 florins punishes infractions of these regulations.

Milk is not allowed to be hawked about, and can only be sold by cowkeepers or dealers at their shops or in the markets. This is not intended, however, to prevent its being sent to customers' houses from the dairies. Only wholesome, clean, and unadulterated milk is allowed to be sold, and it must be kept by dealers in wooden, earthenware, or well-tinned iron vessels. The measures used for selling it must be duly stamped. All milk is subject to inspection together with the premises in which it is kept, and to facilitate this all milk dealers are bound to give notice of their intention to commence business. Each name is entered under a special number in the Municipal Register, and the number and name of the dealer must appear over his shop door. The selling of adulterated milk is punishable by confiscation of the milk and a fine not exceeding 150 florins, which punishment is increased in cases of adulteration with material injurious to health by imprisonment for a term up to two years. In aggravated cases the fine may be extended to 500 florins. Other infractions of these regulations are punishable by a fine of 25 florins, to which may be added three days' imprisonment.

Persia.—Mr. Lawrence, writing from Teheran, observes that in the religious law drawn from the Koran strict enactments existed as to adulteration of food, but they are no longer in force in Persia, and at present there are no laws on this subject. Nobody is charged with the inspection of food brought into the bazaars, and the punishment of offenders depends entirely on the caprice of the Governors of the towns. Bastinado is the usual form in which it is administered, but in cases of old offenders convicted of using false weights and measures the ears or nose are cut off, and in extreme cases one of the hands. It sometimes happens that an angry populace takes the law into its own keeping, and an offending baker

is nailed by his ear to a door in the Maidan and left there till sunset. In the villages it is the custom for each family to bake their own bread, but in towns, especially when corn is scarce, adulteration exists to a great extent in the shape of earth, plaster, etc. Hitherto the authorities have done nothing to remedy the evil. No chemical or microscopical investigations have been set on foot, and the greatest ignorance prevails upon all the modes of adulteration. In the spring of last year some traders bought sulphate of soda from a Persian druggist the effect of which was fatal in two cases. The matter was referred to the Shah, who ordered an enquiry to be made into the matter and named a committee for the purpose, the president of which was a Prince who had great influence and was considered one of the most learned men in the country. He was told that the first thing to be done was to have the drug analysed, in order to discover what had been added to it. But it was not possible to hold a *post mortem* examination of the bodies of the victims, and in the mean time the druggist presented the Prince's servants with a large sum of money. The only result of the commission was that an Inspector of druggists' shops was appointed, who will probably never enter upon his duties.

In some places in the Caspian provinces disease in wheat is very prevalent, and as the bad grain is not separated from the good, strangers tasting the bread are often seized with dizziness and sometimes even with temporary mania.

The same ignorance prevails at Tabreez. It is true that the religious law forbids believers to sell diseased cattle, but even the most conscientious butchers agree in considering a beast sound as long as it is alive and able to move. In fact many of the diseases peculiar to Persia are believed to be caused by the bad quality of the meat which is sold. Fish is taken and exposed for sale at all seasons, and there is not the slightest supervision over the sale of agricultural produce whether good or bad.

New York appears to have quite a speciality for scientific adulterations, which are largely practised in the case of syrups, articles much in request throughout the States. They are sold wholesale by dealers under the name of sugar drops, and afterwards retailed more euphoniously as golden syrups—*lucus a non lucendo*,—seeing that sugar is the very last thing that they contain. They are in fact produced by the destructive action of strong sulphuric acid upon starch. The following test will enable the purchaser to detect the fraud:—Dissolve a teaspoonful of the gold syrup in a wine-glass of rain water, then add a few grains of tannic acid, which will turn as black as ink. Or still more simply, make a cup of strong tea and add syrup to it, when the tannin in the leaves will make it into very passable

EGGS AND THE EGG TRADE.

Eggs is eggs now,—an axiom the truth of which cannot be disputed, though its grammar may be open to objection. Eggs always were eggs, by the way, but just now they assert their superiority to their predecessors, owing to the large prices that the egg of the period commands. Early in January of the present year Honfleur eggs, which are regarded as the best from France, and which generally fetch from 1*s.* to 1*s.* 6*d.* the hundred more than Cherbourg eggs, were quoted at 18*s.* The word hundred, however, is one of those comic fictions of which our complicated table of weights and measures contains so many. The nominal hundred is virtually the long hundred or the great hundred, as it is facetiously called, and is not 100 at all, but 120. Honfleur eggs are now so scarce that hardly any are to be obtained, and those which are procurable are open to the objection of antiquity. The following table, compiled from the Customs returns, shows the number of cases of eggs imported into London during the year 1870, from the countries named :—

	France.	Belgium.	Spain.	Portugal.	Hamburg.
January	708	428	449	369	883
February	1767	200	645	577	268
March	3279	320	958	322	51
April	2556	294	567	249	69
May	3999	489	1051	1032	11
June	5263	241	474	241	158
July	5324	264	68	321	36
August	5324	588	268	185	1
September	3838	283	110	296	—
October	2111	430	231	337	90
November	957	1130	1561	643	327
December	674	2460	1226	101	869
	35,800	7,127	7,608	4,673	2,763

Large quantities are in addition imported into London from Holland, Bremen, Sweden, etc. Denmark last year sent us 92 cases, Russia 17, and Messina 7. There is a very large importation of eggs from Hamburg into Newcastle, Grimsby, and Hull, while Holland sends large supplies to Grimsby and Harwich. There is no doubt that the trade from Holland and Hamburg to our eastern coast has largely increased since the declaration of war, though there are no statistics available to prove this. The war has been an ill wind that has blown good to Ireland in this respect, and her egg trade has been greatly developed, Liverpool being the chief port of arrival.

Southampton is the great port for the arrival of eggs. The following shows the number of cases received there during the year 1870 from the localities named :—

	France.	Channel Islands.	Portugal during the year.
January	7692	480	
February	8844	473	
March	19307	1343	
April	21183	2572	
May	22468	1524	
June	18389	1655	
July	14190	418	
August	15580	249	
September	9638	1695	
October	9503	234	
November	9265	1079	
December	103	36	
	156,162	11,758	3,340

In addition to these, large quantities from France arrive at Shoreham, Newhaven, and Littlehampton, together nearly equalling the imports at Southampton. There are also considerable imports at Bristol, Weymouth, and Poole. Shoreham supplies nearly all the south coast towns, two steamers being almost entirely employed in the trade.

The number of eggs in the cases varies considerably. Two cases of exactly the same size and packed in exactly the same way will naturally contain the same number of eggs—*ça va sans dire*—that is to say if—there is much virtue in an if—the eggs are of the same size; but acute and profound philosophers will probably tell us that there never were two eggs of exactly the same size, any more than there ever were two blades of grass alike. But, setting aside such niceties, circumstances alter cases, and the cases from one place differ widely and deeply and, in short, altogether from those of another. The Cherbourg cases contain about 1,125 eggs each; from Honfleur (half-cases) 600; from Belgium 1,125; while from Hamburg the eggs arrive in casks of from 1,500 to 1,600 each. Formerly a duty of 10*d.* the great hundred was levied, and then one case was taken at random, the eggs counted, and the rest taken at the same quantity, an allowance being made for those that were broken. They now come quite free, and not more free than welcome. The egg-chests, however, are occasionally "spitted" by the Customs officers, to discover any article liable to duty, a process which is very rarely indeed rewarded with success. Marvellously few eggs are broken in proportion to the millions imported. They are placed between layers of straw, as close as

possible, and the straighter that they are placed, the better the packer shows his capability of laying eggs. Vauxhall is, or rather was till December last, when the export of eggs with other edibles from France was prohibited, the chief dépôt in London, owing to Southampton being the nearest importing town. The largest wholesale egg market in London is the Borough Market, and next comes Spitalfields.

Il y a des œufs et des œufs, and there is a great difference in the quality and nutritive properties of eggs, the causes being innumerable. Irish eggs are on the whole perhaps the best that we get, partly owing to the rapidity of their arrival (our Irish friends like to turn their money quickly, whereas the French turn their eggs), and partly to the superiority of the fowls and their better feeding than those of other countries. In spring our eggs, both from France and Ireland, but especially the latter, come very fresh, and are often sold retail within ten days of being laid. Speaking generally, a good supply of moderately fresh eggs continues up to the autumn. They are usually the cheapest in August and September, and the dearest in November and December, reaching their highest point just before Christmas. The French (of course in this, as in other statements, due allowance must be made for this exceptional war) could send us eggs much more rapidly than they do, but it must be presumed that they know their own trade best. Many of the eggs used in our last Christmas puddings were laid in France two months at least before the war broke out. Large quantities are pickled, as it is technically termed here; that is to say, they are kept in lime water in receptacles placed in dark rooms. This injures the quality of the eggs, and renders them very likely to break in boiling. Others, but not on so large a scale, are kept in trays or net-work frames in dark rooms, the eggs being placed on end, and turned every day. The quality of eggs is also affected by their treatment after arrival here. They will sweat in hot weather if exposed to the sun's heat, and in winter they will sometimes freeze, the white becoming a mass of ice. There is great competition in the retail trade. In what are called cutting neighbourhoods —perhaps because, commercially speaking, the tradesmen cut each others' throats—eggs are to the cheesemonger what sugar is to the grocer. Both commodities are sold at very little profit, and sometimes at none at all.

J. M. Philp.

FOOD AND REFUSE.

The *Food Journal* rendered a great service to food economy by publishing, at page 543 of its first volume, a short paragraph on the scarcity of sardines. The scarcity of sardines for eating is, it is said, not due to the fish having deserted the coasts of France and Spain, as the pilchards have those of Cornwall, but because they are pressed into fish oil, and in that form sent into Liverpool to be made into soap.

The result of this is, that a quantity of eatable matter is being converted into uneatable matter, and food is sacrificed for soap. Now soap is a very useful article and very requisite, but we do not want the supply of food diminished. It has appeared to be proper that soap, candles, lubricating grease and oils for illumination should be made out of tallow, lard, fish and vegetable oils. Spirit varnish is another such natural application, but we forget that the varnish is made out of spirit, and the spirit is made out of grain, and that the grain might be eaten by man and beast. In a broad sense all methylated spirit is an abstraction of food.

The waste appears very natural, and little bits of soap, candle-ends, and dabs of spirit are used up on a very small scale, until one ceases to regard the aggregate of waste. This aggregate is, however, enormous, and the worst is that we have no statistics. While the Corn Exchange is bringing in food the Baltic is ministering to waste, and one is almost inclined to mitigate the harsh denunciations of adulteration, when it is found that so much tallow has been saved for food by employing it in the construction of butter instead of candles. Fat is first made into waste tallow, perhaps by boiling down, and then treated as refuse and meritoriously turned to use.

The reflection on reading of the eatable fish wasted in oil is that it is most desirable that the application of animal and vegetable substances capable of being employed as food should be discouraged, and that efforts should be made for their replacement by mineral substances, or at all events by such vegetable substances as from their poisonous or other unsuitable qualities cannot be adapted as food.

It will therefore be a great service if the conductors of the *Food Journal* will add to their labours a new department, by directing attention to such articles suitable for food now employed in manufactures, for which substances unfit for food can be substituted.

Hyde Clarke.

FOOD IN CENTRAL AFRICA.

"Tell me what a people eat and I will tell you what they are," wrote Brillat Savarin in his great work; and the inferior style of dinner which prevails on the African continent would probably have enlisted his sympathies on behalf of the slave owners had he lived in the days when that question was so angrily discussed. It is in fact impossible to deny that cookery and civilisation are inseparably connected. The Orientals have never thoroughly acquired the art of dining, and have therefore always stopped short at a certain point. But although the negroes are decidedly low in the social and culinary scale, they are, both as men and as diners, superior to many other races; for instance, the aborigines of Australia, the Andaman islanders, and various tribes in America and the Indian Archipelago. The African boils his food. He is therefore acquainted with pottery, one of the most useful and one of the most elegant of the rude arts. The bushmen of South Africa, who are usually regarded as a race entirely distinct from the negroes, frequently subsist in a very miserable manner on roots, berries, and even locusts. These insects are highly relished by many negro tribes, and are eaten as a *hors d'œuvre* or accessory, as we eat shrimps and prawns But the bushmen eat them vulgarly, in order to allay the cravings of hunger. This fact alone would be sufficient to enable the gastronomic ethnologist to assign them a very inferior position in the family of man, and the observations of travellers and anatomists justify him in so doing. In considering the food of Africa, therefore, the bushmen will be placed on one side.

The Africans may be divided into three classes. 1. The purely pastoral, who live on milk and meat with the slight and irregular addition of wild grain from their pastures or of corn collected from other people's stores. 2. The purely agricultural, who eat only vegetables. 3. Those who subsist on fish. Between these classes there are various sub-classes or classes of transition, and these are by far the most numerous. Whether there exists a people who have never tasted grain, or who have never tasted meat or fish, may perhaps be doubted. Certainly the pastoral, hunting, and fishing tribes of Africa usually combine a little agriculture with their

principal pursuits, or obtain some farinaceous food by selling skins, smoked fish, etc., to the agricultural tribes. These again, though they live on vegetables, usually contrive to taste meat from time to time. They have invariably (as far as my experience goes) domestic animals—fowls, goats, sheep, etc., which they kill on great occasions. They get an antelope now and then, and some tribes have always their grandmothers to fall back upon. Among the agricultural or starch-eating tribes oil is the substitute for meat. Some physiologists assert that farinaceous substances combined with oil supply all that is necessary to human life. Be that as it may, in the forest regions of equatorial Africa and elsewhere meat is the rarest of all luxuries, and in such countries the slaves must pass long periods of time without tasting it. Even the dogs are there obliged to adopt a vegetable diet. It has been inferred from such facts as these that a vegetable diet is proper and natural in a hot country, and if the Africans showed any antipathy to meat there might be some foundation for this theory. But the fact is that they are so fond of meat that they will eat "gamey" crocodile and other carrion substances from which a starving beggar in England would turn in disgust. It is quite possible that an Englishman should eat less meat in the tropics than he takes at home, but vegetarianism is as wild an outrage on the laws of health in one country as in another. If a man vegetates (as the Africans often do) he can live on vegetables, but if he works hard either with his head or his limbs he requires good solid food to repair the waste. I have been among a people who never breakfast, but who eat once a day only, and then very sparingly. But what is their occupation? Sleep and talk. When they go on a journey they break through their usual rule and eat before they start. Yet with all this I am willing to admit that habit has much to do with the quantities of food that we eat, which must appear extraordinary to the Africans, for an alderman devours as much in a day as would serve him for a month. No doubt a large part of that which we eat simply passes through the system without yielding up any of its nourishing powers, and probably the savage derives the full benefit of his simple meal.

I shall not enter into long details, as it would be very easy for me to do, respecting the various forms of food which exist in the African peninsula and the elaborate methods by which many of them are prepared. I shall content myself, for the present at all events, with stating as briefly as possible the principal articles of food in Central Africa, and these will be found to depend upon the physical geography of the country.

The border regions between the Sahara and the Soudan are inhabited by nomade tribes who live chiefly on milk, and who pass from pasture to pasture according to the rains. Southwards of this region we enter the fertile plains of the Soudan, and here we find in some places rice, in others millet or maize, forming the staple. But meat is also abundant and milk is an article of daily diet over the plateau which extends southwards till it merges into a range of forest covered hills. From these mountains to the sea all is forest; cattle become scarce. In some parts rice still holds its ground; in others cassava, plantains, eaten in the half-ripe or starchy stage, and sometimes yams, form the bread of the people. In these dark and gloomy forests even wild animals are rare, and unless there are rivers in their neighbourhood supplying fish the inhabitants live in a very poor way. In such forest regions the palm oil tree is usually found, and its produce, which is used here in the candle and soap-making business, is there much thought of as an article of food. In the higher plateau this tree does not exist, and the oil used in cooking is obtained from the ground nut (which also supplies much of the olive oil of Marseilles), or in the form of vegetable fat from the famous shea-butter tree of Park.

There are various articles of food in Africa which form a commerce of their own. Salt, for instance, doubtless creates more movement and interchange among the African tribes than gold itself. It is supplied to Central Africa from the mines in the Desert on one side, and from the European settlements on the other side. Corn is largely exported from the Soudan states to the Oases of the Sahara. I found an active trade going on in rice and gold dust between the miners of Bouré and the adjoining agricultural tribes. Smoked fish is hawked about the country in many parts, and there is a peculiar fruit called the *kola* or *gooroo* somewhat resembling the chestnut in shape, very bitter, but which has the effect of making water that is drunk afterwards taste like *eau sucrée*, or, according to one observer, "like white wine and sugar." It is most eagerly sought after by all Mahommedan tribes. It is not only employed as a comfit, but is used mystically and emblematically in all their marriages, negociations, and oaths, and is so highly prized in the upper parts of Senegambia that, according to an old traveller, "fifty of them will buy you a wife." Yet on the Kru coast and the gold coast, where it grows abundantly enough, no attention is paid to it by the natives.

With respect to cooking, the Africans, as I have before observed, are a *boiling* people. Everything goes into the pot, is served in a calabash, or wooden bowl, and is eaten with the hand. Oil, tree

butter, or cow butter (according to the latitude) flavours the corn, the rice, the plantain, the yam, or the cassava (which last is the worst food of all); and the mess is strongly seasoned with peppers, sometimes in such fiery fashion that my lips have swelled up after a few mouthfuls had been taken. The young leaves of the baobab *(Adansonia)* are much prized in native cooking, and the celebrated *palava sauce* is so elaborately compounded that it can only have been invented by a Soyer among the negroes. They usually consider it unwholesome to eat eggs or fresh (that is unsalted) butter, or to drink new milk, which they always prefer in the form of curds. The pagan tribes drink also large quantities of palm wine by tapping the tree, collecting the sweet sap, and fermenting it in the sun. They also brew a sweet beer from maize or millet, or they make a kind of mead.

To sum up, if we divide Africa into two geographical regions, the one an open plateau at some elevation above the sea, and the other consisting of forest and marsh, sometimes mountainous and sometimes forming alluvial plains, we shall find the first region inhabited by negroes partly Mahommedan, possessing cavalry and walled towns, and everywhere displaying a certain energy of character; the second by pagan savages, living in miserable villages, constantly at war, and engaged in no regular commercial intercourse with one another.

In the first region agriculture has made some progress. The fields present a clean and flourishing appearance; the hills may be seen covered with cattle, while ricks of rice and corn, or dry granaries like houses in miniature, gladden the eye of the hungry traveller. There are markets in the town where meat is often exposed for sale, and people even stand at the side of the road to offer onions and such minor articles of food to the passers by.

In the second region the women are the agriculturists, and plant just enough to keep their husbands and themselves from starving. They can endure hunger and often die peaceably of starvation, but they cannot endure work. They have no cattle, but here and there a goat or a sheep and a few fowls. These are their possessions, which they seldom eat, but keep to sell for a little finery, or for the salt which is necessary to sustain even their miserable lives. The traveller who ventures among such a people must endeavour to acquire that noble indifference about dinner which has been so much lauded by philosophers.

Winwood Reade.

PUBLIC HEALTH.

Part XI.—Sanitary Supervision (Central).—Continued.

5. H. M. Commissioners in Lunacy.—By the twenty-fourth annual report of the Commissioners in Lunacy, published July 7, 1870, we learn that no less than 54,713 insane persons were under official cognisance in England and Wales on New Year's day of the past year, being in the proportion of 2·47 to every thousand of the population. We are told, moreover, the very unwelcome fact that the numbers increase by something like 1,665 yearly, a frightful tax on the intellectual energy of a nation, and one which any future Chancellor of the Sanitary Exchequer will do well to consider. I would now simply point out that 55,000 is equivalent to the population of a considerable town, and that the sanitary care of so large a body of sick, many of them poor, forms no small item in the health arrangements of a country. Whether residing in asylums or in private houses under special provisions, all persons who have been legally certified to be of unsound mind are visited periodically by members of the Central Board, who traverse the whole country as inspectors under the various Lunacy Acts.

The Board consists of six honorary and six salaried Commissioners, the latter being distributed equally between the legal and the medical professions. Its functions are primarily protective against illegal detention, cruelty in treatment, etc.; but the Commissioners are also endowed with certain sanitary powers by which they have been enabled to wage a tolerably successful battle with the ignorance and meanness which up to a recent date prevailed in county asylums throughout the country, and which, according to the last report of the Commissioners, may still be found in many parts of enlightened England.

6. The Inclosure Commissioners.—So curiously, and apparently without reason, are sanitary functions interwoven with the ordinary duties of our central departments that it is no easy task to draw the line and complete the list of central authorities in Public Health. I cannot, however, omit to mention one central body—the Inclosure Commissioners, who, as the modern representatives of the old Commissioners of Sewers, perform in sparsely

inhabited districts functions akin to those which the Local Government Acts Office performs in towns and villages. By the Land Drainage Act of 1861 new areas for agricultural and sanitary drainage operations may be created—areas over-riding county, parochial, and other artificial divisions, and determined solely by the natural configuration and watersheds of the country. Much has already been done in this way for the extension of tillage and, as a natural consequence, for the improvement of health. At Moreden Carrs, Durham, a marsh of 4,000 acres has been reclaimed. Staunton Common in Herefordshire and many other places are reported to be "very much improved" and "the district much benefited." Altogether some 70,000 acres had in May, 1869, been brought under the operation of this Act,* and the advantages of combining various health areas for a common purpose, such as sewerage and drainage, can scarcely be overrated. "The wider the jurisdictions (within reasonable limits)" says Dr. Rumsey,† "for sewerage and water supply, especially as concerns the *distribution of sewage* and the *sources of water*, the better will be the plans, the more perfect the engineering works, the more effective their practical results. To limit the sphere of a local government to the particular place in which a special work is required to be done, without reference to the bearings of that work upon neighbouring districts, is little less unreasonable in principle and inconvenient in practice than it would be to confine powers and assessments for building and repairing bridges to the parishes in which they are erected." The towns and hamlets in a common valley are connected by ties which cannot be broken with impunity, and I may quote the floods in the Upper Thames Valley and the filthy stream flowing under Westminster Bridge as well known types of a very common relationship. But besides these indirect connexions with the Public Health the Inclosure Commissioners have at times an immediate controlling power under an Act passed in 1867, by which certain local authorities can delegate to the Towns Drainage and Sewage Utilisation Commissioners *any* powers which they possess for sanitary purposes, provided that the consent of the Inclosure Commissioners be previously obtained.

I have now come to the end of central health authorities. It has been my endeavour to point out the functions of the several

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* See evidence of R. B. Grantham, Esq., Inspector under the Drainage Acts, under the Inclosure Commissioners, before Royal Sanitary Commission, p. 83.

† Comments on the Sanitary Act, 1866, by H. W. Rumsey, in Dr. Lankester's "Journal of Social Science," October, 1866.

departments which preside at this present time over the Health of England and to show the confusion which exists as to the powers vested in them, and the collisions which are inevitable in their working. It remains for the Sanitary Commission to bring order out of this chaos, and to show if possible how conflicting interests may be satisfied—how existing rights may be balanced in a new Sanitary Code. If a period of peace and prosperity is before us, Parliament may find leisure to consider the health of the people. "*Public Health is Public wealth;* these five words form an adage of momentous import and stern truth," said the late Sir James Simpson, Bart., in his address before the Social Science Association in 1867, and the same idea occurs in an address to the same Association by Lord Derby, then Lord Stanley, ten years before. "There is," he says, "something like an anticlimax in talking of the saving of money as the result of the saving of life, but it is worth while to note the process by which, in this as in many other instances, Nature makes our interest to coincide with our duty." On lower as on higher grounds, then, the subject of sanitary reform presses on the attention of our Legislature, and it must not be postponed. Much activity is being shown at present in the Poor Law Board under a young and vigorous chief; the intimate connection between poverty and sickness is better understood, a more liberal and a more thorough medical relief will probably be provided, the seats of devastating diseases and deadly occupations will be pointed out by a more extended registration of sickness; but no isolated efforts by the departments can accomplish all that is so urgently needed, and Poor Law reform, however energetic, cannot be effectual unless as part of much more sweeping changes,—changes which will affect not the Poor Law administration only, but all departments connected in any way with the medicine of the State.* For these changes we must not only wish but strive, and individuals may do much if they remember that it is mainly by unity of purpose and persistence in demand that great measures of Reform in our own as in other times have been secured to the people of England.

Veterinary Department of the Privy Council.—Intimately connected with the health of man is the health of the animals which he consumes as food, and some of my readers will probably now learn for the first time that there is a special department under the Privy Council consisting of a secretary, a superin-

* State medicine, as recently defined by the State Medicine Committee of the General Medical Council, includes "the application of the physical and medical sciences to the safety and well being of the community; also medical jurisprudence and the care of the Public Health."

tendent, with twelve ordinary and twenty-five extra clerks, besides two special inspectors, devoted exclusively to the care and control of animals either threatened with or actually suffering from cattle plague, foot and mouth disease, pleuro-pneumonia, or any of the various ills to which beef and mutton are heirs. An organisation so complete undoubtedly reflects great credit on the agricultural and commercial spirit of the country, and if the contrast were not so glaring between the care for flocks and herds and the lack of care for those who tend them, between the "electrical activity of the Privy Council when the life of oxen is in question and their sluggish action when human life is at stake," no complaint could be made. Perhaps it is only natural that when "my Lords" have to be moved "the farmers and graziers should know how to do it through their representatives in Parliament. They have lusty voices and make them heard,"* whilst the pleadings for poor humanity fall feebly and weak on unsympathetic ears. "If cattle disease were treated as fever is treated," says Dr. W. Budd, "one parish protecting itself against disease, the next doing nothing, no one would stand it." The Veterinary Department of the Privy Council has existed since the year 1866, and to it is committed the entire control of the Cattle Plague Acts, or the Contagious Diseases (Cattle) Acts, as they are more properly called. The work of the office is no sinecure, for it includes at busy times the reception of 1,500 letters daily. I doubt if Mr. Simon, who has nothing to do with this department, could ever boast of receiving so many. The Board is usually formed of men with local knowledge, and, as land owners with feelings acutely sensitive to the matter before them, there is no delay as in ordinary affairs affecting mere humanity; for when danger has threatened and the lives of beeves have been at stake an order in council has been issued within two or three hours of the alarm.

Two Inspectors are employed to visit the various grazing districts and to report. Information is diligently sought at home and abroad on all subjects connected with cattle and their diseases. A statistical department gives then umerical records of disease and death, which are embodied with other kindred matter in an unpublished report to the Lord President or Vice-President of the Council. On the outbreak of disease the local authority is bound by the Act to give prompt information, and to place their local inspector (usually a veterinary surgeon in counties, towns, and boroughs) in communication with the central office. How different from the ordinary "permissive code" as we have seen it in its dealings with a human

* Dr. Farr's speech, Sessional Proceedings of Medical Officers of Health, 1869-70.

epidemic! What wonders might not be worked by the substitution of the little word "shall" for the little word "may" in our various sanitary Acts! The change might even give us control over diseases such as small-pox and enable us to stamp out that and the cattle plague together. In conclusion, I would say a few words on the connection which exists between the diseases of man and of the lower animals. The most arbitrary and mischievous distinctions have been made between the study of human and comparative pathology, as if man and the brute had not anatomical structure, physiological functions, and disease to a great extent in common. But experience shows that questions of the origin, communication, and fatality of disease, and influence of seasons and localities, may be studied in both alike. Indeed it is admitted that the most important advances in our knowledge of *contagium* in human epidemics has been acquired by researches carefully conducted by the best medical observers during the late devastating plagues among cattle and sheep. Dr. William Budd's labours in this direction are well known, and so impressed is he with the importance of extending the observation of disease from men to the lower animals that he would sweep away existing barriers and place cattle plague and murrain, as well as small pox and scarlet fever, under the care of the ordinary officer of health. It is not unreasonable to suppose that a closer study of the lower realms of nature in their medical aspects—the epidemics among sheep and cattle, the appearance or non-appearance of insect pests, the diseases of plants as in the vine or the potato,—would, if combined with a more complete registration of human disease, lead to results of the greatest importance. What do we know of "blight," of "the blue cholera cloud"? May there not be a protective against some of our most deadly epidemics awaiting but the keen insight and persevering experiments of a second Jenner to save millions from death or the dread effects of weakening diseases? It seems at least worth the trial, and I would express a hope that the scientific investigation of disease, not in man only, but in plants and the lower animals, may form an integral part of any new machinery for the control of Public Health in England.

E. T. Wilson.

[to be continued.]

Our herring fishers on the East Coast have lately terminated their season most successfully, the total number of herrings landed at Yarmouth being over 240 millions. Many of the crews engaged in fishing have earned from 1,000*l.* to 1,500*l.* This is a decided improvement on the state of the fishery at Wick and Peterhead a few months back.

AUSTRALIAN WINES.

If there is one branch of trade in articles of food or drink which has undergone a metamorphosis more than another, it is that of wine; and although we are too fond of a glass of good port or Madeira to altogether approve the change, yet we cannot deny that in some respects society is the gainer. The days of high-priced old vintages are gone by, except to the connoisseur who can afford to indulge his taste, and it is doubtful whether the greater proportion of the present generation has ever tasted the generous liquors which so delighted our forefathers. What with the difficulty of getting a really fine wine at a moderate price and the reduction of the duty, the effect has been to flood the country with cheap wines, some of which are utterly innocent of the juice of the grape, while it must be admitted that others are really wholesome and pleasant, though perhaps requiring a little education in taste to enjoy them.

Hungary and Greece have largely entered the arena of competition, and have done much to promote the new regime, but ere long we fancy that some of our colonies will run them hard, and especially those which make up the sum total of that gigantic continent Australasia. Considering indeed the diversity of soil and climate to be found between Bass's Straits and the Gulf of Carpentaria, it is no wonder that Australia can produce wines which for bouquet and body rival some of the best German and Italian wines.

I propose in this short article to describe the character and varieties of Australian wines, which are very little known in this country, and which too many people pooh-pooh just like they do Australian meat, as though it was quite impossible for so young a country to produce anything eatable or drinkable. Some day we shall find out our mistake, and appreciate better than we do now our colonial supplies.

The reports of the International Exhibition recently held at Sydney are well worth perusing, and it may surprise my readers to be told that in the article of wine alone there were 272 exhibits, contributed by exhibitors in the following proportion:—

	Full-bodied Red Wines.	Light Red Wines.	Full-bodied White Wines.	Light White Wines.
Victoria	9	11	11	6
South Australia	17	11	18	14
New South Wales	12	5	14	4

Out of this large number of samples, that which obtained the first prize was from Victoria, a light mellow wine, with a fine bouquet and all the characteristics of Rhenish. It was seven years old, and described as a mixture of Shepherd and German Reisling grapes grown in ordinary sandy loam. The wines which were classed amongst the best were known as Hermitage, Mataro, Gamai, Reisling, Chasselas, Verdeilho, Roussette, and Tokay, and of these the first five are specially recommended to the *vignerons* for cultivation, though the question is complicated by the fact that certain grapes produce very fine wine in some localities, while in others the same grapes produce the reverse. On this head, experience has proved that the country to the south of the Dividing Range in Victoria is less favourable to the growth of red wines than that of white, while to the north of this range it is just the reverse.

To English ears wine only seven years old sounds rather absurdly, but it must be remembered that the very earliest date at which it was made at all in Australia was not further back than 1845, when Messrs. Ryrie produced their first brew at their station at Yering from sweet-water and black-cluster grapes. It is therefore too early to state positively what improvements may take place in these wines by keeping, although there is no doubt but that very rapid changes occur. A wine from Echuca, which was condemned a few years ago as being positively nasty, was put aside for three and a half years, when it turned out most pleasant and drinkable. The judges of the Sydney Exhibition spoke highly of the Victorian wines, which would be exceedingly good if they were only allowed time to mature. The majority of their wines shown were two years old, and none were more than four, but the generality were fruity and full bodied, with good sound bottom. The largest producing district in this colony is that of the Murray River, which is specially suitable for the varieties of Verdeilho, Reisling, and Tokay. Indeed, Albury, a town of note in that district, seems to be the wine metropolis, as it contains the cellars of Mr. Falloon, a large grower, capable of holding 70,000 gallons, which are generally placed in the market when about three years old. But, although this district has a reputation for good wine, an immense quantity is sold which is anything but drinkable. It is often not three months old, exceedingly dear, and not half so palatable or wholesome as good beer. On the other hand white wine of pleasant quality is largely and increasingly sold in Melbourne at 2*d.* and 4*d.* the tumbler, and experience proves that men will drink wine in these dry climates in preference to all other beverages, if they can procure it cheap and grateful to the taste.

Queensland does not appear to figure at the Sydney Exhibition, but from the latest statistics of that colony, I perceive that the cultivation of the vine shows an increase of 332 acres in 1869, against 194 in the previous years, and that in 1868, 2,155 gallons of wine were made in the Brisbane district, and 3,631 in that of Drayton.

South Australia seems to be the most forward in wine production of all the Australian colonies, and a little work by Mr. Ward, published in Adelaide in 1862, describes even then some thirty or more vineyards. The results of the exhibits show that the superiority in numerical increase is still kept up. South Australia too has the advantage of being first in the field in the English market, the wines known as Auldana, imported by Messrs. Leigh and Apps Smith, of Fenchurch Street, being, to the best of my knowledge, the only Australian wines procurable in this country. It is true that a small quantity of white wine called Bukkulla, from New South Wales, and also of red wine known as Tintara, from Adelaide, were imported by Messrs. Cohen and Messrs. Elder respectively, but I am not aware that they were ever to be purchased. The Auldana vineyards, so called from their founder Mr. Patrick Auld, are within sight of Adelaide, and comprise about 140 acres, planted with vines known as Verdeilho, Tokay, Muscat, Gouais, Grenache, Donzelinho, Carbonet, Carignan, Mataro, Malbec, Black Portugal, and Shiraz. Great attention appears to have been paid to the classification of the vines, one portion of ground being devoted to the growth of particular kinds in their required proportions, while the yield of others has been reduced by grafting upon them the necessary varieties. The result has been the production of a really fine wine, known as red and white Auldana, on which the importers have bestowed much care as to cellarage (a point commonly neglected in Australia) and general maturing. They have both (and especially the white) a very distinctive character, of most refined bouquet and flavour, and, as I am told by those who have drunk them regularly, are exceedingly well suited to cases where a generous body is required with freedom from anything like acidity. I have little doubt that, if laid down with care and kept like European wines, the Auldana vintage would become of remarkably fine quality; and I am quite sure that if the Australian growers in general would bestow more care in their selection of the soil, mode of cultivation, cellarage and proper keeping, they have the materials for a commerce in wine with this country which it will take time only to develope.

Phillips Bevan.

TRICHINATOUS PORK.

Exceptionally an unclean animal, domesticated yet wild, stupid, stubborn, ugly, repulsive, and inheriting no trait calculated to enlist the sympathies of either Jew or Gentile, the hog nevertheless claims some attention from sanitarians on account of the deadly effects which the consumption of its flesh, when parasitically contaminated, occasions among those who under such circumstances use it as food. Revelling in filth and delighting in gluttony as no other quadruped does, it lays itself peculiarly open to disease. Accordingly we find that it is the only one among the inferior animals afflicted with measles and leprosy.

At the present time pork forms a very large proportion of the animal food of the world, and it certainly possesses some virtues which deservedly entitle it to a rather prominent position. In cold weather, to the European, North American, and northern Asiatic, the moderate consumption of sound pork imparts a genial heat, whilst the ease and speed with which it can be cured by means of salt or sugar have made it one of the great food resources of the poorer classes, and for the sustenance of the navies and armies of all nations. Compared with some of our chief nutritious supplies derived from animals, except in the matter of fat, it occupies indeed the lowest place, as the following analysis from Chambers's Encyclopædia shows :—

	Veal.	Beef.	Mutton.	Pork.
Mineral matter	4·5	5·0	3·5	1·5
Gelatine	7·5	7·0	7·0	5·5
Fibrine and albumen	9·0	8·0	5·5	4·5
Fat	16·5	30·0	40·0	50·0
Water	62·5	50·0	44·0	38·5
	100·0	100·0	100·0	100·0

But as every rose has its thorn, so every animal owns a parasite. To the pig we are indebted for two of the most repulsive and dangerous worms ever introduced into the human system—the *tænia solium* or tapeworm, and *trichina*. It is to the latter that we particularly call attention, as the people of this country are frequently in the habit of partaking of cold foreign sausages and uncooked pork relishes, liable to contain this deadly parasite. The *trichina spiralis* seems to have been first observed by Tidemann in the year 1822, but was not described until 1835 by Owen. Between the latter date and 1859 this worm remained very much of a dissecting-room curiosity, and

was not regarded as dangerous; but immediately afterwards the Prussian doctor Virchow had no less than six patients suffering from trichinatous disease in one year. Fear and interest were at once excited, especially as Zeuker, another Prussian medical man of repute, showed that the migrations of trichinæ among human muscles, so far from being harmless as had hitherto been believed, produced symptoms of the most agonising kind, inducing death even in the strong and healthy within a few weeks after the sufferer had eaten contaminated pork. Dr. Philip Frank, on the staff of H.M. Army Medical Department, was the first to remit an account of this terrible disease from Germany. It appeared in the *Medical Times and Gazette* of May 26, 1860, of which the following is a condensed account:—The girl, whose sufferings are detailed, was a servant at a farm house where two pigs and an ox had been killed about Christmas of the previous year. She fell ill soon after having eaten some ham and sausages, and complained of extreme lassitude, depression, sleeplessness, loss of appetite, and other symptoms which earned for the case the name of typhoid fever. Presently her whole muscular system suffered from excruciating pain, especially towards the extremities. Dropsical swelling of the limbs followed, the poor girl perishing miserably on or about the thirtieth day from the commencement of her illness. A *post mortem* examination revealed myriads of trichinæ alive in all stages of development in every striated muscle, not even excepting the heart. Hearing of the occurrence, Professor Zeuker visited the farmhouse and obtained some of the same ham and sausages which the unfortunate girl had eaten, when he discovered that both were infested with the parasite in the encysted condition. He also learned that soon after the girl became ill, the housekeeper and all the other servants were prostrated, although they ultimately recovered after more or less suffering. The butcher who had officiated was confined to bed for three weeks, troubled with what was said to be rheumatic pains in the limbs, arising no doubt from trichinatous infection, the result of the well known but reprehensible habit which prevails among German butchers of tasting in a raw condition all meat that they slaughter.

But a more terrible scene was yet to be enacted. In October 1863, at the little town of Helstädt in Prussia, on a festive occasion, 103 healthy persons dined together. Before a month had elapsed 20 had died of trichinatous disease, 80 were in the excruciating agonies of the fearful malady, while the remainder, not yet attacked, lived in continual terror of the fatal worm. Case after case perished lingeringly and horribly, as although most of the leading physicians of the country were consulted, none were able to cure or

even assuage the pangs of the dying. At first it was suspected that the distemper was the result of intentional poisoning, but microscopical investigations of the remains of the feast revealed the cause of all the suffering and death. The damage had been done at the third course of the dinner, consisting of *Röstewurst*, or smoked sausage meat, which on examination turned out to have been made from an ill-conditioned pig and swarmed with encapsuled worms. Attention was once more directed towards the perishing sufferers, small portions of their muscles were excised and subjected to the microscope, when the tissue was also found thronged with trichinæ in all stages of development.

It must not for a moment be supposed that the object of the present article is to convey alarm. On the contrary it is simply to place the public on their guard. Were the former the case any apprehension would at once be dissipated by Dr. Cobbold in his paper read before the Linnæan Society,* the substance of which has been embraced in the following :—"In England ordinary precautions will suffice to prevent the introduction of trichiniasis. English swine are almost entirely, if not absolutely, free from this disease, and not a single case of trichiniasis in the living human subject has been diagnosed in the United Kingdom. Some twenty or thirty cases have been discovered *post mortem*, but it is most probable that all these individuals had contracted the disease by eating German sausages or other preparation of foreign meat." But in these days, in which cheapness is too frequently achieved at the sacrifice of purity or care in the selection of the various articles of human food, no precautions can be unnecessary. This will be evident when it is stated, on the authority of Professor Kühne, of Halle, who was entrusted by the Prussian Government in 1865 to investigate the disease, that "pigs affected with trichinæ do not present symptoms sufficiently obvious to be recognised by the breeders. The process of boiling or roasting should be carried on with the greatest care. People should not partake of any meat that has not been sufficiently cooked, and should avoid all roast pork which presents traces of blood."

Previously to the appearance of the above in print, Dr. Thudichum, at a conversazione of the British Medical Association held at Downing College, Cambridge, on the 4th August, 1864, exhibited living trichinæ in various stages of development, which he obtained from the muscle of a rabbit and from a pork chop.

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* Vol. IX, No. 36. Also *British and Foreign Medico-Chirurgical Review*, April, 1868.

That they are remarkably tenacious of life will be seen from a communication made by Dr. Cobbold to the *Lancet* on the 13th of January, 1866. He says, "'Cook your pork thoroughly,' is not bad advice; but the question arises, 'What is thorough cooking?' On this important point I have to remark that the application of very considerable heat is probably rather favourable than otherwise to the development of these entozoa. Recently on dropping hot water, almost boiling, over living non-capsuled trichinæ under the microscope, I found that the only effect was to make the little worms more active. Determined to kill some of them, I boiled a minute portion of human trichinised muscle for more than five minutes. The fragment contracted almost to the consistence of leather, yet on subsequently breaking up the trichina capsules the flesh-worms appeared uninjured."

Early in 1867 the *Springfield Republican*, a newspaper published in Massachussets, U.S., gave an account of six cases of trichinatous disease which occurred in one family in that place, caused by eating contaminated uncooked ham. A few days afterwards the symptoms of disease began to appear—pain and swelling of the eyes, agony in the stomach and bowels, vomiting, diarrhœa, and profuse perspiration. Afterwards the limbs of the sufferers became rigid, the least movement causing unspeakable torture. One of the daughters, an interesting girl of seventeen, died after a fortnight's suffering. In a small portion of muscle examined *post mortem*, trichinæ were found swarming to the fearful extent of from 50,000 to 80,000 per square inch. Towards the end of the same year, trichiniasis having reappeared at Berlin, and seventy persons being at one time ill from having eaten of pork bought from one butcher, Drs. Weiss and Wiessner, of Vienna, undertook many elaborate experiments with the view of throwing additional light on the awful malady which it would be out of place to recapitulate here. Suffice it to say that they calculated that it would take 35,000,000 of trichinæ to equal the weight of one drachm, and that an effectual remedy was at length discovered by the administration to adults of a dose consisting of fourteen grains of hydrosulphide of potash along with an equal weight of vegetable substance, such as boiled carrot, parsnip, or potato. The origin of the disease was also traced to musty bread, on which the contaminated pigs had fed, in which an insect named the trichinosaurus had deposited its eggs.

Surely the public need only a warning to be on their guard against trichinatous pork, and our meat inspectors require but a hint to keep their microscopes always ready for use.

William Cochran.

THE COST OF LIVING IN AMERICA.

There was perhaps no country in the world where one could live luxuriously at so small a cost as in America prior to the breaking out of the Civil war. Of this fact Americans were wont to boast, while invidious comparisons were freely drawn between the expense of living in Europe and the United States.

Until 1861 provisions were plentiful and therefore cheap throughout the entire Union. Hence the western world was regarded as the Paradise of the poor, hundreds of thousands of whom rushed thither from the over-peopled countries of Europe where the labour market is over-stocked, wages low, and the primary necessaries of life costly if not scarce.

The charges for board and lodging in the leading hotels of America were so extremely moderate as to create surprise. Two dollars and a half per day included everything, and for this sum four substantial meals were supplied. A very liberal table was provided and every luxury produced in its proper season. We have often wondered how all this could be done, and yield a profit. It did, however, and many hotel proprietors amassed considerable fortunes and retired from the arduous occupation of studying the comforts and supplying the wants of their numerous guests.

It was in part owing to this very cheapness that families made hotels their permanent home. They found it much more economical to reside in such places than to keep up private establishments, while by so doing they possibly exchanged a life of unmitigated monotony and dulness for one of bustle, gaiety, and excitement. Hotel life in the States has its charms as well as its comforts, and although objections may readily be made to it on moral grounds, it is not altogether devoid of advantages. To bring up families, especially daughters, under such influences is decidedly pernicious, for the boys become "fast" as they grow up, and the girls lose those feminine attributes and attractions to which in this country we are inclined to attach such importance.

In the Southern States the prices of food, which rose gradually during the rebellion as provisions became scarcer, have not returned to their original standard, and probably never will. Even in producing localities certain commodities became wholly unattainable. We give the average price of ordinary provisions before the war and

their gradual rise during succeeding years. For example, butter that could be purchased at 12c. per lb. increased to 80c. in 1861 and to $4 in 1864; eggs that brought but 8c. per dozen rose to 60c. and subsequently to $3; ham that fetched but 12c. per lb. could not be had under $1 75c.; beef, the ordinary price of which was between 8c. and 10c. per lb., increased to $1 50c.; a turkey that might be bought for 75c. in 1860 four years afterwards realised $5 and even $7; so with chickens, which rose from 30c. a pair to $2 50c. and even $4; flour which sold at from $2 to $5 per barrel (according to the locality) increased to $25 during the early part of 1862; coffee, the usual price of which was 15c. per lb., gradually augmented to $4 50c.; tea, ordinarily charged at the rate of 50c. per lb., increased to $12 in Charleston and other places, while brown sugar, in States producing this article, increased from 7c. per lb. to $2, the price at which it was sold at Mobile and Charleston. Fruit and vegetables, fabulously cheap during the season, also increased proportionately in price.

It is chiefly owing to the enhanced cost of provisions that the leading American hotels have nearly doubled their charges, so that board cannot now be obtained under $5 per day. There are a number of inferior establishments where a much lower tariff is demanded, but some of these are objectionable as combining cheapness with nastiness. Other establishments, again, make no fixed charges for board, and if a guest lives pretty generously he will find that $10 per day will scarcely cover his expenses. This does not include wine, for none except persons of princely income can afford such a luxury. Claret and Champagne, the wines most in vogue, are charged at the rate of from $5 to $7 a bottle. Spirits cost double or even treble as much as they can be purchased for at home.

The high price of provisions is keenly felt by the artisan and labouring classes of America. Although their wages have been slightly augmented, the increase has not been in just proportion to the cost of living. The consequence is that they lead a "hand to mouth" existence, and are frequently put to dire shifts. The comforts to which they were once accustomed are now beyond their reach, while their struggles and privations are enhanced by the rise in rents. We have often wondered how they managed to make ends meet, especially when taking into account the exorbitant cost of the commonest raiment. And yet, strange to say, these combined disadvantages do not prevent strikes, though it generally happens, as elsewhere, that in the contest of Labour with Capital the latter comes off triumphant.

American beef and mutton are greatly inferior to the like edibles in this country. The meat is disagreeably fibrous, is deficient in juices, and lacks flavour. This is mainly attributable to the climate and to the housing of cattle during several months of the year. Besides, the system of cookery pursued is bad, meat being generally overdone in the preparation. We have seen steaks and chops served up in the best hotels and in private houses as dry as sticks, rendering sound teeth and a powerful digestion necessary for proper assimilation. Nevertheless people are wont to disregard what is due to their health, and "bolt" their food with a celerity positively alarming. It is no wonder that dyspepsia is a prevalent complaint, which is not relieved by the copious use of tobacco.

The institution of a paper currency in the United States has been a great misfortune, and tends to enhance the cost of living. Hence we are not surprised at the very general desire to return once more to specie payments. Paper money (or greenbacks) is not estimated like coin, and its use serves to make all classes more or less improvident. "If you do not use it," we heard one say, "it will wear out in your pocket;" and there is some truth in the suggestion. At all events, a dollar, equal to about 3*s*. of English money, will not go much farther than a shilling would in this country. Such is the enhanced price of every commodity, which now is almost at the standard of war prices, and, we greatly fear, likely to continue so for an indefinite time.

S. Phillips Day.

Economy in the Use of Salt.—Green wood contains about 40 per cent. of its weight of moisture which forms a watery vapour when burning, and even dry wood has over 40 per cent. of the elements of water, viz., oxygen and hydrogen, that forms vapour when such wood is burnt. Coal consists mainly of the carbon in wood, which in burning forms a very drying heat. Most of our readers are familiar with the usual process of barbecuing large pieces of meat over coals. If such meat were too high above the coal fire to roast, it would soon dry, and when dry, a very little salt and smoking will keep it indefinitely. Like cured bacon, it should be packed in tight casks and kept in an airy room. If anybody after killing his hogs is short of salt, he may extract the water from the meat by drying it over burning coals as soon as possible, first rubbing in a little salt. Trees planted around a meat-house are injurious by causing dampness. Meat should be dried by a coal fire after it is smoked. Some may dislike to have meat done in this way, but it is a well known fact that the driest hams generally keep the best. Sweet dry bacon is far better than that which is moist and tainted, and our aim is simply to show how meat may be cured and kept long with a trifle of salt, when war has rendered the latter scarce and expensive.—J. R. Jackson.

THE SANITARY CONDITION OF DUBLIN.

The City of Dublin is situated in latitude 53° 20′ 38″ N., and in longitude 6° 17′ 30″ W., and at a distance of 292 miles W.N.W. from London. The rather small river Liffey intersects the city, dividing it into two unequal portions. Dublin proper is built on the sloping sides of the valley of the Liffey, but a small portion of it and several important suburbs skirt the estuary and extend along the beautiful shores of Dublin Bay. In 1861 the population within the municipal limits amounted to 254,293, occupying 22,925 houses. The area of the city comprises 3,807 statute acres, and the "density" of the population is 66·9 persons to each acre. The mean annual temperature is about 50° (excessive heat or cold being rare), the rainfall is 26 inches, and the number of days on which rain falls 180. The mean degree of humidity is ·750 and the prevailing wind is south-west.

The Dublin Registration district includes the city and all the large and wide spread suburbs (except one, Kilmainham) which lie on the south side of the Liffey and the Bay, and which in 1861 comprised a population of 314,409, living on 9,745 statute acres. The population of the city has not increased since that year, but that of the whole district is now probably about 330,000.

The population of Dublin is on the whole rather a poor one, though the proportion receiving relief under the Poor Law Acts is smaller than in the case of London and most other English cities. The manufactures are not important, and the number of merchants engaged in the foreign trade is comparatively small. There is of course about the usual proportion of extensive wholesale dealers who carry on business in the larger towns. The nobility and large landed proprietors who have town residences in Dublin have dwindled down to a few dozen. Formerly, both before and for some years after the "Union," whole quarters of the city were occupied by the aristocracy, but their houses have now been either converted into public Institutions or have passed into the possession of lawyers, doctors, and business men. In the last century Dublin was the second city in population in the United Kingdom, and in size was only exceeded by about half a dozen Continental

capitals. In 1728 its population amounted to 146,076, at which time its manufacturers were in a flourishing position; and the presence of thousands of the upper classes and their equipages lent gaiety and animation to its large and handsome squares and streets. At present an undue proportion of the population belongs to the poorer classes, and this circumstance must be taken into account when considering the vital statistics of this city. It should, however, be stated that the prosperity of the city has been steadily increasing during the last ten years; various civic improvements have been carried out, and many beautiful public and private buildings erected. The tonnage of the port has been trebled within the last thirty years; and during that period 300,000*l.* have been expended in improvements connected with the bay, docks, and river, and a still greater outlay for further improvements is decided upon. The rates of assessment for the purposes of local taxation for the year 1870 amounted to 237,758*l.* The landed and house property of the Corporation is worth nearly 30,000*l.* per annum, and will soon be greatly increased by the lapse of leases.

There are about 800 squares, streets, lanes, etc., in Dublin, and the extent of roadway is 108 miles. It must be confessed that the bad scavenging of the roads is loudly and justly complained of, but the Corporation excuse themselves on the ground that the scavenging fund is inadequate for the purpose. On the other hand the drainage of the city is in a most satisfactory state, nearly all the more important thoroughfares having been provided with excellent sewers during the last twenty years. The height of the various parts above the sea level varies from 5 to 70 feet, the average being 40 feet. Near the river the sewage cannot flow from the drains except for about twelve hours per day. The water-closet system prevails in all the respectable parts of the city, and all the sewers empty themselves into the Liffey, which lately has emitted in warm weather a most abominable odour. This evil will, however, soon be remedied, as the Corporation have decided to apply to Parliament for a Bill to enable them to construct main drainage works similar to those which now divert from the Thames much of the foul liquid which formerly polluted that river. The estimated expense of the Dublin sewerage works is a quarter of a million sterling; and an Act enabling the Corporation to borrow the money has already been passed. It is intended to utilise the sewage for agricultural purposes, and my estimate (based upon analysis and upon calculations of quantity) of its value as a fertiliser is 179,000*l.* per annum—that is assuming its constituents to be sold at the same rates as if they were constituents of artificial manures.

It has recently been stated by several writers that the death-rate of Dublin is extremely high, but I dispute the accuracy of this assertion. The belief in its unhealthiness appears to be founded on the assumption that the birth-rate being very low, its death-rate is, compared with other places where the death-rate is the same but the birth-rate much higher, comparatively high; it being well known that the mortality amongst young children is always very great. In 1869 the death-rate in Dublin (proper) amounted to 24 in every 1,000 persons living, in London to 25 per 1,000 persons, in Glasgow to 34 per 1,000, and in Edinburgh to 30 per 1,000 persons living. The children born in Dublin were in the ratio of 26 per 1,000 of the population, in London the births amounted to 35 per 1,000, in Glasgow to 40 per 1,000, and in Edinburgh to 38 per 1,000. It is a matter of notoriety that the Irish are a most prolific race, and it is well known to the Dispensary Physicians of Dublin that a large proportion of the poorer classes do not register the births of their children. On the other hand, for a variety of reasons, deaths are with few exceptions registered. The number of vaccinations performed in Dublin greatly exceeds the number of births recorded. In Ireland, as I have shown in my reports on Public Health in the *Quarterly Journal of Medicine* and in my "Lectures on Health," vital statistics are so imperfectly collected that for all useful statistical purposes they are worse than useless, being positively misleading. To show how fallacious any conclusions drawn from the vital statistics of Dublin must be, I need only refer to the Registrar General's Report on the births and deaths during the last quarter of 1870. In that report the number of births of boys in the suburban districts was 201, whilst the number of girls born is set down at 159. It is quite evident that no such disproportion between the relative numbers of boys and girls born really existed. In 1869 the proportion of deaths from zymotics or preventable diseases was 1 in every 4·9 deaths from all causes. Small-pox for some time past has been unknown.

Charles A. Cameron, M.D.

[to be continued.]

The trade in Australian preserved meat has rapidly assumed proportions of great magnitude. The first satisfactory shipments were made in 1866, but the value of the whole amount sent in that year was only 321*l.* From that time the increase has been extraordinary. According to the *British Trade Journal*, the total was 18,820*l.* in 1867, 45,746*l.* in 1868, and 80,385*l.* in 1869, while it is believed in 1870 to have been more than 200,000*l.* About three-fourths of the shipments consist of mutton, the remainder of beef.

POPULAR FOOD ANALYSIS.

No. 10.—WINE—Continued.

Port.—In 1754 a quarrel occurred between the growers and the British factory, which caused a sensation at the time, and the disclosures therein made are so instructive that we reproduce the whole from the original papers for the amusement of our readers. The affair commenced by a complaint from the British, in which it was stated,—

"1st. That the love of gain had induced many people to bring wines from bad and inferior situations, and lot them with the wines of the factory.

"2nd. That the farmers did not employ people enough in the treading of the grape, nor allow it fully to ferment.

"3rd. That it had become the practice during the vintage to stop wine in its fermentation, by throwing into it brandy, an invention which cannot be considered otherwise than diabolical.

"4th. That the white is not separated from the black grape, which gives rise to the loss of colour in the wine; whereas, if the grapes were properly separated, the colour would be preserved; and it would be unnecessary to throw in elderberry (which gives a bad taste to the wine), and to make use of other confections, which render it an artificial drink, and deprive it of its natural flavour and durability."

To these charges the Alto-Douro growers immediately replied,—

"You confess that the reputation of Douro wines was once great; and that they enjoyed the character of being natural, and with little or no artificial treatment! But who can have defrauded them of their reputation, but the factory itself, with its inventions and instructions? The fact is evident; for the climate has not changed, nor have the plants degenerated; on the contrary, the inferior kinds of grapes have been in a great measure eradicated, and the vineyards renovated with the more delicate and agreeable descriptions, producing wines of a fine character. At the vintage, the ripe are separated from the unripe grapes with especial care; and the latter are allowed to ripen fully; and in the vats the must is pressed with unceasing labour.

"How is it, therefore, with such an excess of treatment, that the quality of Douro wine has degenerated? It is the English factory which has caused this falling off; and in this way:—the English merchants knew that the wine of the the factory, from being of good quality, had become better, and they wished that it should advance even further than its natural capabilities would admit; and on being drunk, that it should be a potable fire in spirit, an inflammable powder in fieriness, an ink in colour, a Brazil in sweetness, and an India in aroma! They began secretly to introduce the opinion that it was convenient to throw in brandy at proof, in the fermentation, to give it life, and the husks of elderberries, or the skins of black grapes, to give it colour; and as the compound bettered in price, and the English merchants always complained that the wines were wanting in

life, colour, and ripeness, the prescription spread until the wines became a compound mixture, the farmers expending in the ingredients employed five or six milreis (a milrei is worth 4*s*. 6½*d*. sterling) in every pipe of wine: so that he who expended most, and most adulterated his wine, was the first who sold, and at the highest price.

"But now we will give you a final proof of the matter. How many pipes of brandy does not every one of the houses of business in Oporto consume, in throwing into the wines, after they are deposited in their warehouses? What an infinity of alqueiras (an alqueire is equal to 24 lbs. English) of elderberry do you not order to be sent to the same warehouses, to be thrown into the wines! What a quantity of jerupiga, made from brandy, do you not order to be produced for the purpose of being thrown into the wines! We certainly would not assert this, if so many of your commissions had not passed through our hands every year for the purchase of these materials, and if we were not obliged, for the sake of truth, to confess the circumstance, although against ourselves; and more especially when it involves matters of credit and interests of third parties. From these examples and practices, the gentlemen of the north, who complain of adulterations, will determine who are to blame, and not *you*, who cannot be judges in your own cause, and more especially so, as being the guilty party."

The above extracts prove that adulterations were then practised, and that they were quite unnecessary. Since these days the vineyards have been cultivated on improved principles, consequently there is even less excuse for sophistication now than there was then.

If the genuine article be so bad, it is plain that it is more easy to imitate port than any other wine; and there is no doubt that this imitation is extensively practised both in the South of France and in this country. Here is a receipt said to be used in the South of France:—

Calabre	50 gallons.
Moist Sugar	3 lb. 4 oz.
Cashoo	2½ drachms.
Cardamums	5 drachms.
Lime Flowers	18 drachms.
Logwood Extract	a sufficiency

The following are said to be used by the manufacturers of genuine fruity port in this country:—

Rough Cider	4 gallons.
Elderberry Juice	1 gallon.
Logwood in Chips	4 oz.
Rhatany Root	½ lb.
British Brandy	2 quarts.

Or, for a better quality:—

Cider	26 gallons.
Port Wine	4 ,,
Elderberry Juice	6 ,,
Brandy	6 quarts.
Logwood	1 lb.
American Isinglass	12 oz.

In a work specially circulated among the trade, the enterprising publican is thus taught to make 8 gallons of real port into 60 gallons of the "fruity" compound:—

"Take 8 gallons of good port wine, and put it in a clean 60 gallon cask, first fumed with sulphur. Add to it 40 gallons of cider, and then 12 gallons of British brandy. Add juice of sloe and elder till it acquires the proper degree of roughness, and then cochineal till it communicates a fine brilliant colour. In lieu of cider you may use turnip juice."

Having thus looked into the mode of manufacturing port for the British market, let us see in what state it reaches the consumer, and as the best means of doing so we present our readers with the following analyses:—

1.—*Analysis of a Sample of genuine Port.*

Alcohol	14·220
Volatile acids	·071
Fixed acids	·577
Cream of tartar	·016
Tartrate of lime	·070
Sugar	2·540
Sugar added as an adulterant	none
Extractive matter	6·266
Mineral matter	·211
Water	76·029
	100·000

2.—*Analysis of Five Samples of Wine purchased in London.*

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Alcohol	14·500	14·400	13·180	13·720	15·280
Volatile acids	·110	·140	·180	·351	·247
Fixed acids	·692	·710	·712	·441	·522
Cream of tartar	·021	trace	·021	trace	·010
Tartrate of lime	·026	·051	·042	·069	·051
Sugar	3·788	2·494	3·768	3·768	2·540
Sugar of Adulteration	none	·930	none	none	2·356
Extractive matter	2·197	1·263	6·780	5·622	4·479
Mineral	·296	·372	·337	·294	·342
Water	78·370	79·640	74·980	75·735	74·173
	100·000	100·000	100·000	100·000	100·000
Phosphoric acid in ash	0·060	0·050	0.045	0·043	0·031

These results speak for themselves, and require no comment, seeing that out of the five samples two had been under the "doctor's" hands and one was fast turning sour, while none had the appearance and flavour of genuine fully fermented ports. All were however made from a grape base, and in that respect were really red wines. But four out of the five had been artificially coloured, as was proved by the isolation and examination of the dye stuffs employed.

Before leaving the subject of port, it may be well to give a hint or two which will enable persons who are not judges of wine to detect adulteration. Many simple chemical processes have been proposed for this purpose from time to time, but every one has fallen to the ground, and nothing short of a full analysis by persons experienced in the work is of any use. There is however an easy little mechanical process invented by a gentleman of long experience in these matters, and himself a dweller on the Douro, which we illustrate for our readers' use. When port is fully fermented and has had no elderberry *jerupiga* or brandy added to it, it will float for a time on the surface of water; but when it has had any of these additions it will sink like lead, and on this principle the test is based. It is performed in small glass vessels formed of two globes connected together like a sand-glass, and with a small tube opening into the upper globe. To use it the lower globe is filled with pure water, and the wine to be examined is then gently poured into the upper globe, and the whole left at rest for a few minutes. The drawing explains the effects which may be produced.

Fig. 14 shows a fully fermented and genuine port; Fig. 15 an imperfect and slightly adulterated wine; Fig. 16 a large adulteration of *jerupiga* falling rapidly; Fig. 17 highly adulterated wine which has entirely displaced the water.

We have tried this little instrument frequently, and believe that it is the best way in which a buyer without experience of palate, etc., can inform himself as to quality. In conclusion we cannot do better than quote the words of the inventor of the above apparatus. "Although it may be convenient for Portugal to sell its brandy in this way, it is not in port wine that the spirit ought to be sent at the rate of 25 gallons per pipe, while elderberries and treacle can be had in England without paying 5*s.* 9*d.* per gallon for the liquor with which they are compounded."

J. Muter, Ph.D.

From the *Chemical News* we learn that in Bavaria a new beer has lately been brewed from rice, which contrasts favourably with the generality of Munich beers. Its taste is extremely pleasant, though mild; it foams strongly, yet retains its carbonic acid well. The following is a comparative analysis of the rice beer, side by side with an average of twenty-one varieties of Bavarian beer.

	Rice Beer.	Munich Beer.
Alcohol	3·65	3·55
Total Extract	7·36	6·17
Sugar	1·63	1·08

DOMESTIC HYGIENE.

No. 2.—THE FIREPLACE.

Having considered in a previous article some of the annoyances arising from defective disposition of the kitchen range, we purpose now to notice a few of the inconveniences resulting from bad arrangements in connection with the ordinary fireplaces of the sitting-room and bedroom. As no doubt most of our readers are aware, these are numerous. They owe their origin principally to three causes, viz.—1, Errors in chimney construction; 2, Defective ventilation; and 3, Bad setting. Besides these there are not a few annoyances resulting from ill-shaped fireplaces, but as these could not satisfactorily be explained without illustrations, that branch of the subject will not be treated under a separate heading, but such reference to it as may be necessary will be made in considering the three headings above given.

1. Errors in chimney construction.—This subject has already been partially alluded to in our former article, but there are several points to be considered in connection with it which did not then come under review. Few things are more annoying than a smokey chimney. Where such exists the architect has been at fault, and it is a fault that does not always admit of remedy without disfiguring a building by the addition of unsightly cowls or chimney pots. It is a somewhat significant fact that at the present day architecture seems to partake more of the decorative than the useful, external carvings and internal painting and moulding occupying far more of the attention of architects than the proper proportions of chimneys, or even the arrangement of doors and windows with regard to a due adjustment and distribution of currents of air. Hence it is no uncommon thing to find rooms in which it is impossible to avoid sitting in a draught, and sometimes they will be found with doors, windows, or chimney occupying every side. In ordinary designs and details of buildings, whilst cornices, copings, mouldings, and other decorative particulars will be found to have been given in fullest detail, calculations as to the relative proportions of the different chimneys in their sections with reference to their

respective heights are rarely to be met with; neither do architectural works as a rule devote sufficient attention to the subject. The draught up a chimney, and consequently its power to perform its proper duties, is to a very great extent dependent upon its proper construction; that is, upon the proper relative proportion of its section to its height, due regard being of course paid to the size of the fireplace below, which is again regulated—or ought to be regulated—by the size of the room in which it is placed. It may be taken as a rule that no chimney should be perfectly straight, so that by looking up it daylight may be seen, but there should always be one bend in every flue close to its lower extremity. This answers a double purpose—firstly to baffle any down draught which may be sometimes caused by a sudden gust of wind, and secondly to prevent the too rapid ascent of heat, which may otherwise be carried away into the air without having fulfilled its proper functions in warming the room wherein the fireplace is set. This causes a waste of power and consequently an extravagance to which we shall have occasion to refer, when we come to the question of economy of fuel.

The *Food Journal* being devoted to the consideration of economic rather than of scientific questions, any attempt to lay down rules here in detail for the construction of chimney flues would be out of place. When once built they are sometimes incapable of correction, and hence arises the necessity of disfiguring a building by external additions of crooked zinc pots; whereas the locality of the fault lies at the bottom instead of at the top of the chimney. In old times the chimney stack constituted an ornamental feature in a building, but now it is too often hidden behind a portion of the roof or rendered conspicuous by abortive excrescences, in utter defiance of all æsthetic considerations.

One of the important functions of a chimney being that of carrying off smoke and other objectionable products of combustion from the fireplace, and of discharging them in the open air at a point where they can cause no annoyance instead of allowing them to escape into the room, any defects of construction which tend to interfere with the proper discharge of that duty constitute a nuisance with which unfortunately most people have a more or less intimate acquaintance. A smokey chimney which owes its defects to a faulty construction is an evil for which no sovereign remedy is applicable. Each case must be dealt with upon its own merits, and that after a scientific investigation and not as a mere haphazard experiment. As a general rule, excepting where the chimney smokes in consequence of insufficient height, or from being over-topped by some adjacent building, the remedy should be

applied at its lower and not at its upper extremity. This will often necessitate the removal of the grate, and prove altogether a dirtier and longer job than the addition of some hideous cowl or patented chimney pot, but it will also be more certain of success, and therefore both cheaper and better in the long run. It is a rather remarkable fact that inventions for the cure of smokey chimneys almost always aim at attacking the evil at the upper extremity instead of where it really exists ninety-nine times out of a hundred, namely at the base of the chimney.

2. Defective Ventilation.—As has been before remarked, defective ventilation in a house is often the cause of greater annoyance than is usually imagined. Applying as it does in no small degree to the question now under discussion, we shall see that it may be the cause of smokey chimneys as well as of a defective combustion in fireplaces. For all combustion a certain amount of air is required, and the more air that is supplied within certain limits the faster will the process of combustion be carried on. With the view therefore of furnishing a proper supply of air to each fireplace without affecting the distribution of the currents throughout a house, far more careful consideration is required than the question generally receives. In the first place it is no uncommon thing to find that a fire will only burn properly if a door or window be partially opened; in another case it is impossible to open either door or window without inducing so violent a draught as to render the room unpleasant, if not unhealthy, to inhabit; again, many of our readers are no doubt acquainted with instances where it is impossible to have two fires in certain rooms burning at the same time, for the draught in one flue being insufficiently supplied from other sources maintains a down draught in the other, and so draws all the flames and smoke into the room instead of their going properly up the chimney. These and many other similar instances might be cited as results due to defective ventilation, and influencing the comfort of a house by affecting the proper discharge of the duties of the fireplaces and chimneys. This is a subject the cause of which it would be impossible to investigate here more fully or to lay down rules for its avoidance. In all cases, however, it may generally be presumed to arise from want of proper proportion in the several parts of a building.

3. Bad Setting.—Where bad setting of a fireplace alone interferes with the proper discharge of its functions the remedy would, *primâ facie*, appear easy and simple enough, but in connection with this subject should also be included badly shaped fireplaces. The records of the Patent Office bear ample testimony to the amount of

thought and consideration which has been given with the view of producing a perfect fireplace. A merely casual investigation will, however, enable any one who has studied the question to observe that most of the so-called inventions are the results of "ideas" and not of scientific application. It may often happen that a fireplace, composed simply of bricks with bars of iron let in, will burn well where an expensive grate would completely fail, and many of the latter class, though constructed in utter defiance of all principles, will be found to answer their purpose in one place and not in another. This may be due to a difference in their setting, or to variations in the circumstances under which they are placed, such as may be found in the shape of the flue, the amount of air available to support combustion, or even a different relative position in the door and windows. When a grate has to be set, it is commonly given to the builder's men, who proceed to fix it in the absence of any superior supervision. Under these circumstances the results may be satisfactory, but it can scarcely be a subject for surprise if they should turn out otherwise.

All chimneys should be kept scrupulously clean, for when foul they will often prove a nuisance by preventing a proper draught, and occasionally, especially in wet weather, by ejecting soot into the room. By no means should any flues be left unswept after the fires are discontinued for the season. It is perhaps not so generally known as it should be that foul chimneys are not unfrequently the means of communicating contagious diseases; nor is this to be wondered at, for supposing a patient with some infectious illness confined to a room where there has been a fire repeatedly in use, the current of air through the room will naturally convey any infectious germs floating in it towards the fire and thence up the chimney, finding a lodgment probably with the soot at some projecting angle. The patient recovered, the room thoroughly cleansed and purified—perhaps whitewashed and newly papered,—it is again considered free from infection and occupied. Fires, perhaps, being now discontinued, it must be remembered that the currents of air become reversed, and the stream rushes down the chimney instead of up it. Thus the germs of infection lodged in the chimney may become displaced, and being carried back into the room may communicate the disease to others probably long after it has been forgotten. For this reason the greatest care should be taken by persons moving into a house that has been occupied at any time previously to see that all the chimneys have been swept since the departure of the former tenant.

F. C. Danvers.

THE PRESERVATION OF EGGS.

Two methods of preserving eggs which I have devised and successfully tried on several occasions since the year 1856 may prove of interest and value to some of the readers of the *Food Journal.*

The first consisted in coating an egg with collodion, which was accomplished in the following way. The egg was held between the finger and thumb, its ends only being touched during the process of rolling it in a small basin of collodion. Removed from the liquid it rapidly became dry, when the unprotected ends received a dash of collodion from a brush or feather. Packed in sawdust, eggs thus treated remained perfectly fresh from June, 1856, until August, 1857, when they were cooked in various ways and tasted by friends. I have since proved that this is by no means the limit of conservation attainable by the process, but for all ordinary uses it need not be exceeded. Of course it is easy to devise other modes of applying the collodion. Of these the neatest was a kind of double loop of fine thread, in which the egg was suspended and then immersed in the collodion. On removal, nothing further was requisite but to hang the coated eggs by their threads for a few minutes, that the protective films might dry and harden, the thread remaining attached to each egg. An elegant method of ascertaining whether the collodion film is perfect and continuous over the whole of the surface of the shell is to colour the collodion pink by a few drops of alcoholic solution of magenta. Any white uncoated portion is thus at once detected, and can be covered by a special application subsequently.

A second method of giving eggs an impervious coating was tried with equal success at the same time as that by collodion. It consisted in the use of pure melted paraffin, which was applied as follows. A light wire basket of very open structure, and holding say one dozen eggs in three layers of four each, is lowered into a vessel of pure paraffin kept just above its melting point, say about 70° Centigrade. A slight agitation of the basket in the paraffin suffices to disengage any adherent air from the eggs; but it must be remembered that the cooling effect of the introduction of the eggs causes at first a partial solidification of the paraffin. This may be avoided by having the latter contained in a large vessel and surrounded by boiling water, and also by leaving the eggs and paraffin for some time in contact. On withdrawing the wire cage

and its contents, the surplus paraffin drops off into the vessel, leaving a thin film on each egg. The cage is then stored, the eggs being removed when wanted by plunging the cage into hot water for a moment.

Modifications in the above plans will readily suggest themselves to those persons who are practically interested in the preservation of eggs. The advantages which these methods possess over the older and usual processes are very obvious on a comparative trial. Lime-water preserves eggs, but it changes the texture of the white, as also the colour and flavour of the yolk. Eggs coated with butter or other fat acquire a rancid flavour, either during their conservation or when they are subsequently boiled in their shells. None of these drawbacks are experienced with the more troublesome but more perfect processes now described. The film of collodion entirely prevents the entrance of air or loss of moisture in the egg so coated. It does not impart even a *soupçon* of flavour to the egg itself at any time. The same is the case with the paraffin if a pure specimen be obtained. The whole of this substance may be recovered for future use from the eggs or their shells when boiled with water, as it floats to the surface and may be removed in a piece when cold

A. H. Church.

Christmas Plum Puddings in Paris.—A lady correspondent in Paris has sent us the following:—Perhaps your readers, and especially some of my fellow countrywomen, may like to know how we made our plum puddings in Paris this year without flour, eggs, and milk, which is not quite, but almost unattainable. Some of the best pastry-cooks are still producing cakes, puddings, and *pâtés, with real butter*, at about 40fr. a pound; but as the price of plum pudding at these shops is 5fr. a pound, you will not be surprised that we women tried, like Johnny Gilpin's wife, that "tho' on pleasure (or rather pudding) we were bent, we had a frugal mind." Refreshing our memories with such luxuries as cabinet pudding, and laying our heads together, a good many curious dishes were produced, but the following was a decided success, the gentlemen declaring it "A 1," whatever that may mean. It has become a standing dish at our house, and may not be found unwelcome elsewhere:—Crush finely and sift three sea biscuits,—we began with some excellent cuddy biscuits from London, but they are all now where last year's flowers are,—mix the powder thus produced with boiling water until it assumes the consistency of a stiff paste, add a wineglassful of rum or brandy, half a pound of Smyrna raisins (we had no choice except between these and currants), an ounce of candied peel, half a teaspoonful of mixed spice, two ounces of sugar, and a little grated lemon-peel; mix well, put the pudding into a buttered mould or pie dish, and bake for an hour. The pudding is very nice and digestible. Of course those who please can add a sauce.

T. E. L.

[BY BALLOON POST.—Jan. 20.]

FOOD IN PARIS DURING THE SIEGE.

The Government recently issued a decree, founded upon the dictum that flour ought as much as possible to be confined to the making of bread, that no baker should henceforth make or sell any biscuit except that which was ordered by the commissariat, and that all the biscuits in stock should be delivered to the Government at fixed rates. To calm the fears of the population, the Government issued an address, declaring that there was no scarcity of bread, and that it would not be necessary to limit its consumption. There are now 388 pairs of millstones at work within the walls, producing 7,000 quintals of good flour per day. The bread is rather dark, for instead of 25 per cent. of the bran being taken out, the extraction is reduced to about 15 per cent. This not only creates a saving of 10 per cent., but also considerable time and expense in bolting, the apparatus and processes necessary for the production of fine Paris mart flour being costly and tedious. There is said to be a little rice mixed with the flour, and I fancy I can discover a little rye, but the bread is good, very good, well made, plentiful, and not dear—18 sous the two kilogramme loaf, or 9*d.* for 4½ lbs. within a small fraction.

The Government, before the investment, got together a large supply of the famous millstones from Ferte-sous-Jouarre, and private millers also brought in stones and bolting machinery. M. Darblay, the great miller of Corbeil, I know not why, left his plant standing, and the consequence has been that the Prussians have turned it to excellent account. The next thing was to obtain millers and stone dressers, and as few people know what the providing of flour for two millions of mouths means, I may mention that a millstone requires dressing after twenty-four hours' work or so, and that 80 to 100 dressers and mill guards had to be found, while the master millers of the neighbourhood placed themselves at the disposal of the Government. The mills were set up in the railway companies' stations, where they are driven by locomotives, in a large establishment where steam power is let to small manufacturers, and in the shops of MM. Cail and Co., the engineers. The last named are patent mechanical, the first are of the simplest construction, while the others are automatic.

Flour mills are not set up in a day; a complete establishment with twenty pairs of stones generally takes at least three months to get

into proper working order, but the automatic mills referred to above were commenced and at work in thirty days. But a much greater feat has since been performed, the engineers of the Great Northern Railway Company having set up a mill with twenty-eight pairs of stones, and got it into work in eighteen days. There are about twenty mills now at work in Paris, without counting a hundred small vertical mills of the Falquer type at MM. Cail and Co.'s, forty-pairs of stones in the military *manutention* establishments, and the private establishments at Saint Denis, Charenton, Saint Maur, and two or three other places. Such are a few of the means necessary for producing bread for two millions of people.

One curious abuse had to be put an end to. Proprietors of horses found that while it cost from 10fr. to 12fr. a-day to feed one in the usual way, a horse thrived very well on about 17 lbs. of bread, which cost only 3fr. 60c.; but as a horse ate as much bread as eight men at least, such an application of breadstuffs could not be allowed. Bread tickets found their way in numbers to wineshops and grocers, and the abuse had to be stopped.

The question of feeding horses has been settled in another way. All the horses, mules, and asses in Paris and the territories around have been called in by the Government, that is to say, all declared to be at the disposal of the authorities; and although those proprietors who can show that they have a sufficiency of forage to maintain the animals are not deprived of their horses, they retain them only as agents of the Government, and can neither sell nor give them away. Those who take their horses voluntarily to the abattoirs receive from 1fr. 50c. to 2fr. the kilogramme live weight for superior animals, the ordinary rates being from 1fr. 25c. to 1fr. 75c. the kilogramme. This month all the horses in private hands are being taken without distinction as fast as they are required for food, and the sacrifice of property under this necessary edict is terrible. I know of an instance in which a splendid pair of carriage horses which cost only a few months since 200*l.*, were sent to the abattoirs, the proprietor receiving just 48*l.* for them; and it is said that a splendid English stallion which cost more than a thousand pounds has been taken and paid for at the same rate. For the meat of one horse this last case seems one of unnecessary waste of money. It is only in the case of superior cattle that any actual loss occurs to the proprietors; the horses of the cab company, and probably also of the omnibus company, bring more than they cost for killing. 6*d.* to 10*d.* a pound live weight is a high sum to pay for horse-flesh, but the best parts are sold retail at 1*s.* to 1*s.* 3*d.* per lb. The internal parts are also dear, a liver and heart being worth about

25*s*., and the raw fat 2*s*. 6*d*. per lb. A large restaurant keeper paid 470fr. for the whole plucks of four horses, and 170fr. for 2 cwt. of bones.

The Jardin des Plantes and the Jardin d'Acclimatation are empty. The animals have all been killed and sold at fancy prices. Two young elephants were sold for 27,000fr. to a butcher, who has made a speciality of such game. The skin was at once sold for 4,000fr.; the feet, trunk, and other parts, are sold enormously dear. The kangaroos and deer of all kinds, cassowary, wild geese, ducks, pheasants, etc., all passed away long since. The Parisians have had the opportunity of tasting bear hams, camel hump, seal flesh, eagle, parrot, and I know not how many other strange birds and beasts. "Camel eats like veal," says one, "seal like lamb, and bear like pig." "Why do you not eat monkey?" says another, "for monkeys imitate everything." All these creatures were killed not because their flesh was wanted to feed the people, but simply because they consumed so much meat and fodder that could not be spared. It is said that the lions and tigers have also been eaten, but I know not if this be true. A proposition was made to turn them out of Paris, and give them a roving commission against the enemy.

The dogs and cats are certainly nearly all devoured. They entered principally into private consumption surreptitiously, but their meat has been and still is sold in several places openly, though it is now becoming scarce. Some time since dog's leg sold for 2fr. a pound, and shoulder and chops for nearly as much. Some adventurous spirits sold horses' heads at the central market at about 1*s*. a pound, declaring that when cooked they ate just like calf's head, but the purchasers say that they much more nearly resembled leather or gutta percha, so that the trade has fallen to the ground. Rats, I fancy, have proved a failure, except water rats, which are scarce, as may be supposed. Rats, we know, are eaten in many countries, but the assertion that they have ever become favourites in France is new. It is said that the coopers and others at Bordeaux keep terriers specially to hunt rats, which are very numerous in the great cellars there, fat and exquisite in flavour; and these men cook them with great skill. A rat with half a bottle of claret is said to be a common luncheon there. As regards rats, a notice has been published by authority, warning persons against the danger of trichinæ to which these creatures are liable, and recommending that they should never be eaten without having been kept in boiling water for some time to destroy the germs of this horrible disease.

The much talked of Prussian pudding, or rather portable soup, has been tasted here. A number of Saxon prisoners were brought

in, and each had a long piece of the *saucisson aux pois*. A piece 2 in. long made a large basin of pea-soup, with bacon, and the whole editorial staff of a newspaper tasted and found it excellent. It only requires the addition of boiling water, and five minutes' cooking. The men provided with it looked well fed and healthy.

Our rations remain as they did last month, and are now regularly served, though horse costs us as much as prime beef should. The only change we have had was salted beef or horse, not good, with the exception of New Year's Day, when we were regaled with some preserved meat which had a rather strong twang of mouldiness, and butter! Now butter is regarded as the very elixir of life at the present moment. A small quantity is made daily in Paris, and sells for about 30*s*. a pound, so that when a family of seven persons was able to purchase half a pound of salt butter at the rate of 2*s*. a pound, it was gala day. In the few shops that still have any it is sold at 10*s*. to 12*s*. a pound. The butter is principally consumed by the leading pastrycooks, who still give us sweets at about double the ordinary price. Plum pudding is a great article in Paris, and I have seen it marked at 4*s*. per lb.

Fuel has been a serious difficulty. The Government called in all the firewood in stock, and the public saw no more of it. It is used, I believe, in the hospitals, public offices, etc. The green wood cut in the Bois and elsewhere is a dreadful failure. We pay 2*s*. 6*d*. a cwt. for it, not delivered, but are only allowed about enough for one fire. It burns a little better than wet sponge. Within the last few days timber, planking, scaffold poles, and all kinds of wood, new and old, are on sale. This costs nearly twice as much, but it is worth four times as much as that of green. Charcoal is 24s. the sack, or more than three times the usual rate.

The Academy of Sciences is constantly discussing means of preserving meat and skins. A communication was made the other day by M. Baudet, who says that meat keeps well if impregnated with water containing from 1 to 2,000th parts of phenic acid, and that the taste of the acid disappears entirely in the cooking. It was proposed that meat so prepared should be enclosed in India-rubber bags, thus importing the meat and rubber together, and preserving the former. General Morni suggested that meat, after being submitted to a current of steam, should be placed in India-rubber bags, and the air exhausted, so that the rubber would shrink close to the meat. The application of phenic acid to the preservation of skins was mentioned, and Mr. Crace Calvert's process referred to, but while that gentleman only employs the acid to preserve skins during the voyage home, M. Baudet prepares them originally with it.

The feeding of the poor is a most serious matter at present, when the demands are five times as numerous as usual. In August last forty-eight economic kitchens were opened (some of them established in asylums and schools, and some in shops), and this number has now been carried to eighty-two. Sixteen of these are managed by private persons, and the rest by sisters of charity, only one servant being paid in each establishment, at the rate of *1s. 3d.* a day where there is but one distribution per diem, and three portions of food, and *1s. 8d.* and six portions where there are two distributions. In addition to these public kitchens there are twenty belonging to benevolent societies, four to private individuals, and eighty-four canteens for the National Guard, making in all one hundred and ninety. Each portion at the public kitchens is charged one *sou*, and for this the holder of a ticket may have 200 grammes (nearly ½lb.) of bread, an ounce of meat without bone, half a litre of soup, nearly two ounces of cooked bacon or salt pork, nearly half a pound of potatoes, or an ounce and a half of rice or vegetables, when there are any of these latter articles. Everything must be eaten on the spot, with exceptions in favour of women employed in cartridge and other Government works. The average number of rations is nearly 200,000, or 2,300 to 2,400 per kitchen; the highest number served by any one of them is about 4,500; the average number of portions is three per person, so that the number assisted is about 60,000 per day. Nominally this assistance is not absolutely gratuitous, but large numbers of tickets are given away by the maires, and also by private individuals. The cost of the rations is rather more than double the price charged to the consumers. It is a significant fact that the food which is most in demand is soup made with salt pork and thickened with peas, or nearly the same as the Prussian soup referred to above. The people find the value of a certain amount of fatty matter without having studied dietetics.

The number of deaths is naturally larger than usual. In the first place the population is unusually large, and all the habits of the people altered; secondly, there are the casualties in the army to be added to the general account; and, thirdly, the weather has been unusually severe. The mortality of the last months of the two past years stands as follows:—1869, Nov., 3,863; Dec. 4,214.; making 8,077. 1870, Nov., 7,444; Dec., 10,965; making 18,409. Difference, 10,332. The returns for the first week of January are very heavy, the deaths amounting to 3,880; of these 329 were caused by small-pox, 251 by typhoidal fever, 343 by bronchitis, 262 by pneumonia, and 151 by diarrhœa.

The following are a few of the curiosities of the shops in the way of prices:—Preserved calf's head (? heel), 2*s.* 6*d.* per lb.; sirloin of beef, in tins, at 6*s.* to 8*s.* per lb.; *pâté de foies gras*, white puddings, etc., 4*s.* per lb.; horse fat, refined, 3*s.* per lb.; mushrooms fresh, 3*s.* per lb.; small tins of prepared chicken, rabbit, etc., 7*s.* to 10*s.*; tins of veal and ham *pâté*, 24*s.*; pots of preserved larks, 24*s.* to 30*s.*; fat larks, 2*s.* each; dry haricot beans, 8fr. the litre (7*s.* 6*d.* per quart); extract of meat exhausted, but a soluble soup selling at 1*s.* 8*d.* a box—sufficient for seven quarts; butters, fresh, 24*s.* to 26*s.* a pound,—salt, 21*s.* to 28*s.*; extra fine salt, 28*s.*; fresh eggs, 2*s.* each; a fine turkey, 120fr. (4*l.* 16*s.*); rabbits, 32*s.* to 36*s.*; and fowls, anything but large, 28*s.* to 32*s.*; pigeons, about one-third as dear as fowls. The *Boucherie Anglaise*, which deals in the greatest eccentricities of all, sells elephant meat at 5*s.* to 16*s.* per lb.; stag, at 5*s.* to 10*s.*; Thibet goat, at 8*s.*; porcupine, at 6*s.* 8*d.* *pâté* of elephant's tongue, from 2*s.* The elephant has had immense success, and the *pâté* made from the liver is pronounced finer than any goose or duck *foies gras* ever eaten. The prices of some *extra delicacies* placed on sale by the Government the other day will give an excellent idea of the true value of such articles, as they were probably sold at cost price. Dutch and Gruyère cheese, 2*s.* 6*d* per lb.; potatoes, 1½*d.* per lb.; pure refined grease, 2*s.* 6*d.*; rice, 5*d.*; salt pork, 2*s.* per lb.

A good dinner may still be had in Paris provided you can or choose to pay for it at the rate of a shilling or two per mouthful; in this case you may still enjoy beef, mutton and veal, poultry and game, not quite *au naturel* however. The *carte* of a dinner on the 26th of December, at a famous restaurant, included calf's head, turtle, and fillet of beef; another dinner included stewed eels, roast rabbits, galantine of beef, etc., with horse sausage, *dos d'ânon en relevé, sauce chasseur*, and *croquettes de rats à la duchesse!*

The following is the *carte* of a restaurant, where usually the only difficulty is the multiplicity that embarrasses choice:—Soups, rice and onion; *hors d'œuvre*, beef sausage, horse tongue; horse *à-la-mode, braisé* and *aux choux*; *terrine de rats de Norvège*; *filet d'âne au beurre d'anchois*; *cotelettes de mulet à la soubise*; *gigot de chien*; rice with chocolate, and in half a dozen other shapes. Fancy, if you can, ye who have studied or amused yourselves in Paris, the whole city without one *traiteur* or *crêmerie* where an omelette, an *œuf à la coque*, or a *biftek aux pommes* can be had for either love or money.

G. W. Yapp.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

MEDLAR JELLY.

Take Medlars, when sufficiently ripe for eating, wash them and put them into a preserving pan, with a little water; let them simmer very gently till quite a pulp; strain through a flannel bag. To every pint of juice put ¾ lb. of loaf sugar, and boil till perfectly clear, which takes a long time. Then put it into small shapes or pots. Should the jelly not be firm when cold, it will require more boiling; but it will not need this if well boiled at the first, and too much water is not put in with the medlars. It should be as firm and clear as calves' foot jelly, of a beautiful yellow colour, and as transparent as crystal. It is very delicious, and so like Guava jelly that people often take it for such.—*Gardeners' Chronicle.*

AMERICAN SAUCE FOR PLUM PUDDING.

Take ¼ lb. of good powdered lump sugar, ¼ lb. of fresh butter, and pound them together in a mortar, with a large wineglassful of brandy, gradually added till all is well mixed.

GEORGE THE FOURTH'S PUDDING.

Take a pint of cream, the rind of a lemon, and a bit of mace and sugar according to taste. Boil them together, then take the lemon peel, beat it in a mortar, and pass it through a sieve. Then add cream, and let it stand till nearly cold. Add six yolks of eggs, well beaten together, and mix it well. Make it into a mould, and place it in a stewpan with boiling water, which must not stand at a higher level than at three parts of the mould. Cover it, set it over a slow fire, and steam it gently for half-an-hour. Turn it out of the mould while warm, and when cold, pour melted currant jelly over it.

SCOTCH WOODCOCK.

Make a thick slice of buttered toast, and spread on it some anchovy paste. A custard made with the yolks of two eggs and a little cream and butter is then to be spread over the toast.

POTATO PIE.

Wash and peel 6 lbs. of potatoes, cut them in slices, add ½ lb. of the fat of mutton or beef, or dripping, cut into small dice. Season the whole with a teaspoonful of pepper and three of salt; cover with paste, and bake for an hour and a half. A bloater, boned and cut up with the fat, gives a nice change of flavour.

NOTES OF THE MONTH.

At the next meeting of the Victoria Discussion Society a paper will be read by Mr. Phillips Bevan, on the "Necessity of Education in Domestic Economy." Lord Lyttelton will preside on the occasion.

Before the appearance of our next number a new Parliamentary Session will have commenced. We fear that out of the many social reforms that were promised last year by the Home Secretary but few will be brought forward, and still fewer will come to a successful termination. As we are told that the discussions will be essentially military, we must put up with some disappointments, seeing that in all probability the safety of our country is at stake. But we hope that even in the midst of this important subject, time will be found for a new Sanitary Bill and a Bill to prevent the adulteration of food and drink, both of which are probably as urgent as any home questions can possibly be. We trust too that in the general overhauling of our military arrangements, the Commissariat will not be overlooked, for in case England is unhappily plunged into a war, we must not risk again those terrible blunders, in the shape of green coffee and mouldy preserved meats, which characterised the provisioning of our Crimean army.

The siege of Paris will have resulted in at least one good thing, viz., the turning scientific attention towards the utilisation of substances for food. We learn that M. Decaisne, the Professor of Agriculture at the Museum, has brought forward a plan for the rapid forcing of cabbages, radishes, and other vegetables, which are to be sown in highly manured land, kept for a fortnight, and used stem and root. It is hoped that when the fresh meat is all gone and the use of salt provisions is necessarily universal, this new adaptation of vegetables may protect the people from scurvy. Bones too are much more utilised than before by the extraction of the osseine by the action of acid, and this is made up into various palatable and nutritious substitutes for butter and jelly.

The statistics of the daily papers reveal a shameful state of the public health in large towns, which should be the foremost in sanitary matters. Leeds has been unpleasantly notorious of late, the death-rate being one-third higher than it ought to have been. An examination of the district shows that the Town Council and Health Committee have been utterly oblivious of their responsibilities,—cellar dwellings, open drains, and abominations of all sorts abounding as though it were the Augean stables, instead of an enlightened English community, as Leeds claims to be. The same state of things exists at Camborne, a populous Cornish mining town, which has been decimated by fever owing to bad supply of water, overcrowding, and defective drainage. The inhabitants have steadily opposed any efforts at amelioration, but it is probable that the authorities will compel them to adopt the Local Government Act.

A new oil is reported as being in use in South Russia, which has wonderful healing properties. It also has the merit of simplicity, being made of the yolks of hen's eggs, which are first boiled hard and the yolks removed, cooked and placed over the fire. Here they are carefully stirred until the whole substance is on the point of catching fire, when the oil separates and may be poured off. The yolk will yield nearly two teaspoonfuls of oil. With all our enormous consumption of eggs it is extraordinary how little we know about them, and of the manifold uses—nutritious, medical, scientific—to which they may be put.

Annatto is an article of some consideration, now that the cheese factory system seems likely to come into play. It is used for colouring cheeses, and as it is very often adulterated, it is possible that it is one of the causes of the want of uniformity in the appearance of English cheeses. An American chemist has introduced a dry extract, which is said to surpass the ordinary material. Annatto is derived from the reddish pulp surrounding the seeds of the *Bixa crellana* or Annatto tree. The South American annatto is made by washing off the red pulp, macerating the product, and subjecting it to fermentation. The pulp is then boiled down to a thick paste and formed into balls weighing from 2 lbs. to 4 lbs. The extract is made by washing the seed and pulp in a chemically-prepared water, and precipitating the matter, which is dried and sent to market under the name of annatoine.

The amount of unsaleable fish condemned during the month of December in Billingsgate and Columbia Markets was 19¾ tons, comprising 54,101 fish. Of this quantity 17 tons 10 cwt. came from the former, and 2 tons 5 cwt. from the latter place. The "bill of particulars" includes 47,200 smelts (smelts, indeed!) 4,979 plaice, 1,324 haddocks, 2 brills, 43 cod, 13 lobsters, 38 mullets, 9 skate, 335 thornbacks, 8 turbot, 450 whiting, 20 bushels of cockles, 60 of sprats, 4 of whelks, and 1,936 gallons of shrimps. We regret to say that there appears to be an increase rather than a diminution in the sale of bad fish, particularly when we take into account that no undue blame could be laid to the heat of the weather. We must remember too that every bad fish seized probably means two which were sold and consumed; and in the face of such serious evils we would suggest that punishment and publicity, in addition to the seizure, be vigorously inflicted in all cases in which the inspectors are satisfied that the offence was not accidental and trivial.

Moore's Rural New Yorker advocates the selling of eggs by weight. "If eggs were sold by the pound, it would not only benefit the consumer but the producer. As the saying is, 'Eggs are eggs,' and a dozen little things weighing 20 ounces or thereabouts, the produce of little half-starved hens, now sell, under the present system, for as much as a dozen Cochin or Brahma eggs weighing on an average from 29 to 30 ounces. This is all wrong, and should produce a universal demand that eggs be bought and sold by weight. Let us have the eggs by the pound, instead of by the dozen."

NOTICES OF BOOKS.

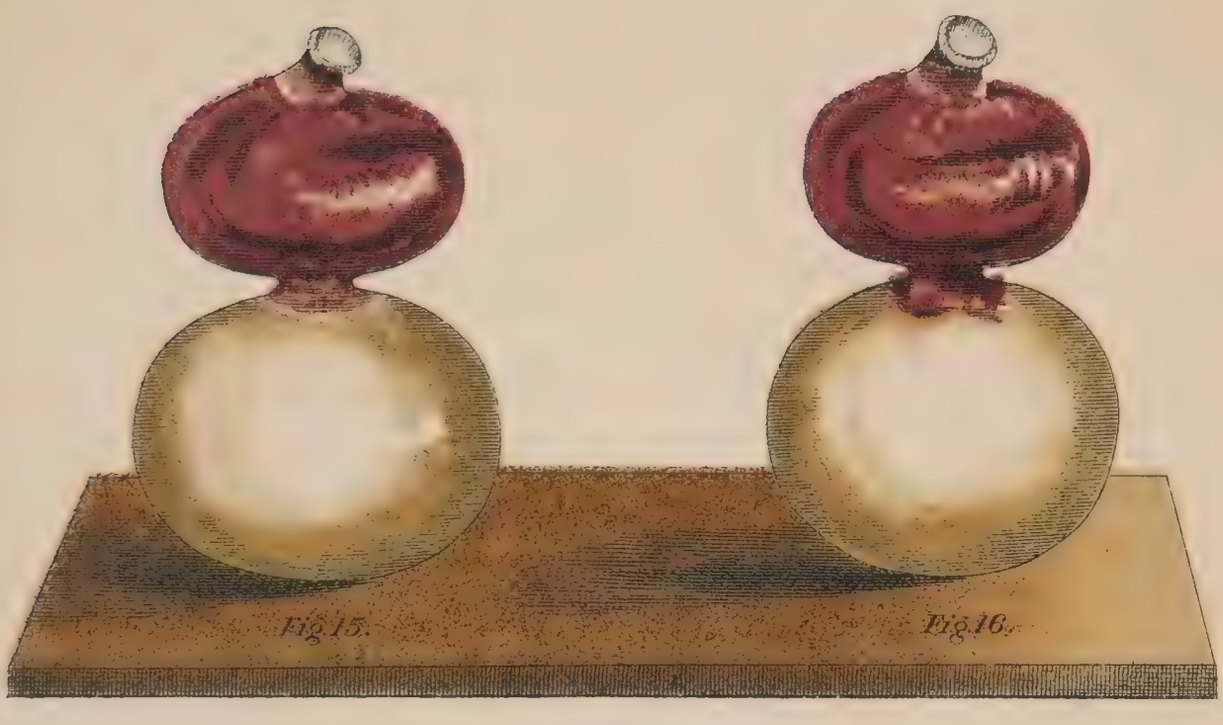
It is scarcely necessary to make mention of "Letts' Diaries," the diversity and excellence of which are so well known to the community at large. But to one of Messrs. Letts' special productions, "Can I afford it?" we would willingly draw the attention of housekeepers, as being exactly calculated to meet the wants and smooth the difficulties of many ladies engaged in that intricate occupation.

BOOKS RECEIVED.

Dr. Voelcker on "Beet-Root Distillation." Savalle & Co., Basinghall Street.

"Typhoid Fever in Islington." By Edward Ballard, M.D. (Lond.) J. & A. Churchill, 11, New Burlington Street.

PORT WINE TEST.



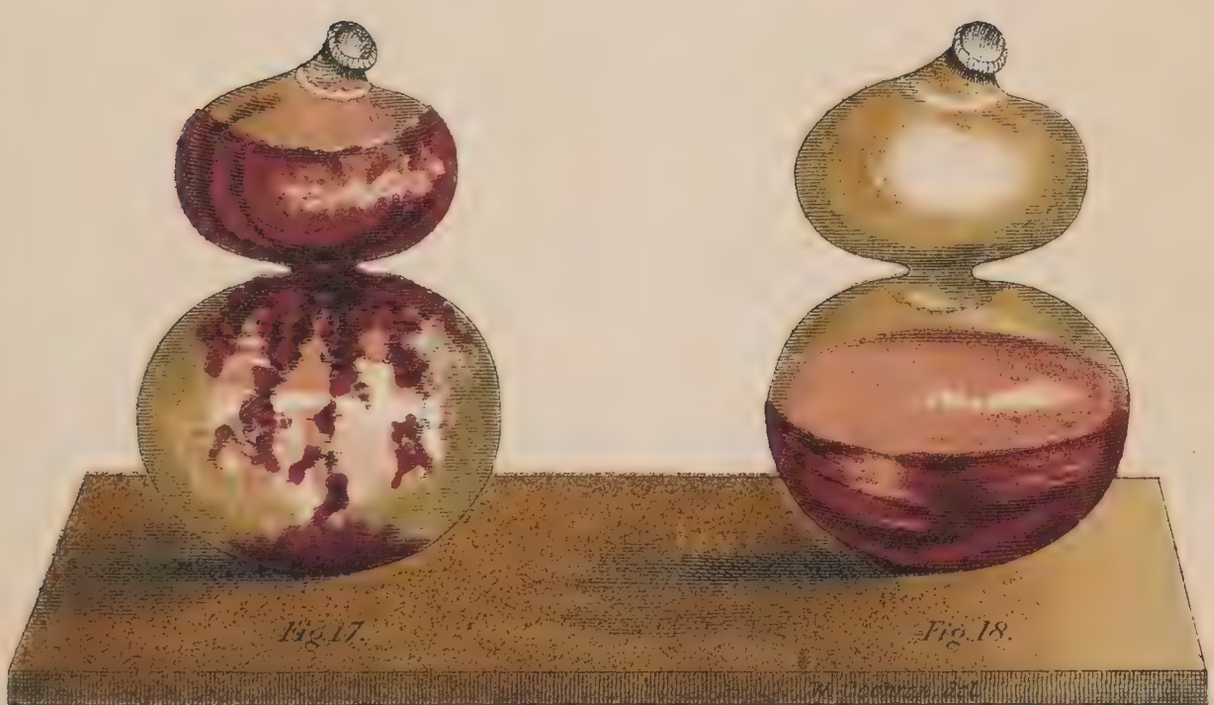


Fig. 15. *Perfectly fermented wine above, water below.*

16. *Imperfectly fermented wine mixed with Jerupiga.*

17. *The Jerupiga falling through the water.*

18. *The Jerupiga settled along with the wine.*

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THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS ON THE ADULTERATION OF FOOD, ETC.—PART VII.

ITALY.—From a report by Consul Colnaghi we learn that the provisions of the penal code of the kingdom of SARDINIA were extended to the various Italian provinces after their annexation to Piedmont. A new code better adapted to the altered conditions of the kingdom of Italy is now in course of preparation.

Title VI. of the Privy Council deals with "Offences against the Public Health," and contains 14 articles, the first eight of which regulate the possession and sale of poisons and substances of a deleterious nature by chemists, druggists, grocers, and others. The two next inflict penalties for the sale of adulterated drugs and the careless preparation of medical prescriptions; while the last four (416—419) relate to the adulteration of food and drink, as follows:—

Art. 416. Every dealer in provisions, wines, spirits, liquors, or other beverages, who mixes with the same, materials which are either deleterious in themselves or have become so by reason of such mixing with food or drink, shall for this act alone be punished with from one month to two years' imprisonment.

Art. 417. The same punishment shall be inflicted on carriers, bargemen, and their dependants, and on every other person employed in the carriage of wines, spirits, liquors, or other goods entrusted to them, whenever, during conveyance, they shall have adulterated the same by the mixture of deleterious solutions.

Art. 418. If by the transgression of the provisions contained in the former articles the death of any persons ensue, the culprit shall be punished with penal servitude *(reclusione)* not exceeding seven years; the liability to the higher penalties of the law being reserved, if it be proved that the culprit had a direct intention of doing harm.

Art. 419. The provisions contained in this chapter do not affect the special laws and regulations relating to the Public Health.

The care of the Public Health is confided to the Minister of the Interior, and under him to Prefects, Sub-prefects, and Mayors. In the exercise of their respective duties the Minister is assisted by the Supreme Council of Health, the Prefects by Provincial, and

Sub-prefects by District Sanitary Councils. The members of all these different Councils receive no remuneration for their services. The following trades are subject to inspection :—grocers, dealers in liquors, confectioners, herbalists, makers and sellers of chemical products, makers of mineral waters and mud (for baths), brewers, makers of aërated waters and other beverages. On any evidence being presented to the Councils of deleterious adulteration in any food, drinks, or medicines, the matter is reported to the superior authority and the suspected goods and premises are examined in the presence of the members of the Council.

The Mayors of the several communes have to exercise supervision as regards sanitary matters over all food exposed for sale, and to see to the removal of any material that may be the cause of adulterations.

The Provincial Councils of Health have to advise on all questions concerning the public health, when consulted by the Prefect.

The District Councils of Health have to examine all questions referred to them by the Sub-prefect, such as the quality of the food, the state of sewers and drains, proper ventilation of dwelling-houses, and removal of all dirt and decaying matter.

Food, under the following heads, comes under their supervision: 1, unripe fruit; 2, spoilt food, such as putrid meat, rotten grain and vegetables; fresh and salt fish that has begun to ferment, and the like; 3, adulteration of food; 4, infected food, as of animals that have died of disease; 5, any beverages mixed with other material for the sake of giving colour or flavour; 6, spoilt liquids, such as the water of public cisterns, which from heavy rains or overflows of the sewers may be rendered tainted or otherwise noxious. These laws and enactments, which are common to the whole kingdom of Italy, are believed by Mr. Consul Colnaghi to be capable of meeting the evils with which they have to contend; though he thinks that the complicated machinery somewhat retards their working, added to which are other hindrances, such as the small pay of the municipal agents and the indifference of the population to the continuance of sanitary abuses. The laws now in force date from 1865, but a fresh series is projected.

The cities of Turin and Milan may be taken as good examples of the manner in which the general sanitary laws are carried out by the municipal authorities. In Turin the mayor is assisted in his sanitary duties by the Board of Health (of which he is President), composed of eight members elected by the Town Council. The officer is provided with a laboratory, in which analyses are made. The officer of health visits and reports upon everything

connected with the feeding of the city, not omitting the condiments in the shops. He makes sudden raids upon the markets and destroys everything bad, unripe, or suspicious—especially poisonous mushrooms. He visits pork butchers, milkmen, innkeepers, butchers, bakers, boarding-house keepers, and makes examination of the articles in which they are dealing, of the sanitary condition of the premises, the cleanliness of the utensils, &c. When reported on, either by this officer or by the police, the delinquents are at once summoned before the municipal assessor. Minor offences are summarily punished with a seizure of the goods and fines varying from 5 to 50 francs (4*s.* to 2*l.*). Grave offences, or cases where the plea of not guilty is entered, are referred to the judicial authorities to be dealt with according to law.

In 1867, in addition to seizure and destruction of provisions unfit for sale, there were forwarded to the health office 132 reports of the violation of the sanitary regulations. Of these 105 related to unwholesome provisions, such as damaged fruit, adulterated butter, rotten eggs, tainted meat, and copper milk pails badly tinned. Two reports referred to suspicious and poisonous substances seized in the public markets. Wine that had suffered from acetic fermentation was also seized, the owners, however, being allowed to dispose of the same to the vinegar makers, under surveillance of the police. The chemical experts attached to the wine market rigorously inspected the wine sold in 931 establishments, including inns and taverns; and 374 imperial gallons of adulterated wine were seized.

147 samples of milk were subjected to analysis by the chemical officer; but the only adulteration ever practised was with water. In 1868, 83 violations of the regulations were reported with respect to preparations of food. In the wine market 7,227 imperial gallons of watered, adulterated, or falsified wine were seized and converted to vinegar. The city of Milan has pretty much the same arrangement of sanitary matters as Turin, except that the office of analyst is delegated to any medical man who may be charged with it, as occasion may arise. To show how minutely the law deals with all these matters, it will be enough to mark the respective paragraphs of the Municipal regulations. Par. 6, sale of beverages; 11, quality of paper for wrapping up provisions; 12, unwholesome food and drink; 13, costermongers; 14, confectioners and bakers; 22, mushrooms; 26, dealers in milk; 31, must in fermentation; 34, baking and sale of bread; 40 melons and cucumbers; 47, retail provision dealers; 58, copper vessels.

[to be continued.]

THE NEGATIVE POLE OF COOKING AND DINING.

The clever and unquestionably characteristic definition of the unfeathered biped, man, as a "cooking animal," is, in the main, a good and sufficient distinction for the species to which it has been applied. The instinct of cooking is no doubt an attribute of the human organization. Whether or not it be true that man is the only animated creature which understands and reasons; and whether or not it be true that all men reason, which are questions, as we all know, still warmly debated by philosophers, there is at any rate no inclination anywhere to dispute the aphorism that man is the only animated creature who boils and roasts, who brews and bakes; and possibly also it may be said that, in some sense, all men roast and boil, or brew and bake; that, in other words, the cooking instinct is inherent and universal. But then it must further be admitted that there is cooking and cooking—in fact negative as well as positive poles of this noble human faculty.

The writer of these lines had occasion some little time since to reflect thoughtfully upon the marvellous distance that lies between the dawn of the instinct and the fullest development of the perfected art that concerns itself with cooking and dining. It was at an auspicious time when he was the recipient, in his own person, of the dinner-giving hospitality of the worshipful Company of Grocers, in their fine old hall in Princes' Street. A chance neighbour at the luxurious board, who seemed to be initiated in the deeper mysteries of the place, had just practically illustrated what generous wine should be by summoning at a beck, from some secret treasure-cave below, the old Madeira that is held to be one speciality of this ancient Company and one of great refinement and excellence; and the master had just pledged his guests in the "loving cup," and dispatched the capacious and sparkling goblet to work its way down the several ranks ranged along the tables that had borne the endless succession of proofs of successful induction and experiment in the science of cooking. It would be altogether a work of supererogation to say how very admirable and complete the practice and art of dining has been rendered by this worshipful and hospitable Company. The matter

is one that stands accepted and indelibly marked in the present experiences, as well as in the venerable traditions, of the Great City. At any rate the writer has no intention of attempting the difficult task of describing the excellencies of the feast. His present purpose is to deal with the opposite extremity of the subject. He proposes to relate another phase of hospitality, connected with the opposite or negative province of cooking and dining, that occurred to him not very long before, and that came back very vividly to memory and very suggestively in the light of strong contrast, as he looked around, and chewed the cud of the "Grocers'" luxurious pasture.

His previous experience in the negative province of the culinary instinct and arts came in this way. He was making a horseback journey, in the prosecution of a certain task of official duty in the young colony of Natal, in South Africa, in the company and under the guidance of the resident magistrate of the district; and he had left a Dutch settler's house in one of the less settled portions of the colony, soon after the mid-day hour, purposing to reach the magistrate's own home, some sixteen miles away, by the decline of the sun. The journey lay over the shoulder of a huge bluff just passing into the dimensions of a veritable mountain, and then down a steep gorge, and through beautiful thorn-clad valleys, environed by mighty hills, of which some are only accessible to four-handed baboons and to birds. At the end of the ride there was a somewhat large river to be forded, in which, on the previous day, the water did not reach to the horses' saddle-girths. But, as the Fates ordained, on this occasion a thunder-storm burst upon the valleys as the magistrate and his companion descended into them from the gorge, and, when they reached the river, which had to be crossed before the night's resting-place was attained, it had been transformed, as is often the way with these South African streams, into a foaming torrent over 20 feet deep, which no horse could have breasted. An attempt was made to seek some other hospitable roof several miles distant, along the course of the stream. But this ended at last in the travellers being fairly trapped between subordinate tributaries of the river, which were also swollen by the storm into impassable torrents. In this exigency there remained nothing to be done but in the early hours of the night to take refuge in the rude shelter of a native's hut. The black proprietor of the mansion was one of the subordinates of the magistrate, and therefore the reception was a comparatively distinguished and favourable one. Everything that could be offered for the comfort and consolation of the unex-

pected guests was at once at their command. But, in order that a clear idea may be conveyed of the exact character of the hospitality, it is necessary that a picture should be presented of the mansion in which it was to be exercised.

The travellers passed through a gap in a round fence of faggots and stakes, and came in the dark upon ground that seemed very much like the soil of a wet straw yard. Here the horses were divested of their saddles, and tied, without shelter from the pouring rain, to one of the stakes of the fence. This was rather a departure from the proper course of proceeding. The right thing to have done, according to the customs of the region, would have been to have taken off the headstalls, bridles, and saddles, and to have given the horses a gentle kick to start them off into the broad open champaign of the South African Continent, trusting to Providence for their being reclaimed thence for further service hereafter. The saddles were dragged through a dark hole, into which, upon all fours in the rain-saturated mud, the writer and his companion then followed them. They were now upon hard, smooth ground, in the place of wet, sloppy soil. It was at once manifest that their heads were under shelter of some sort. But what the nature of that shelter was, they, squatting patiently on the ground, had to see, when means of vision were provided. These shortly came in the form of some fragments of burning wood, which were brought in, through the same hole, by a dusky-skinned Kaffir, and there manipulated upon the ground until a fire was kindled, which very soon forced the wet and tired men, who were watching the proceeding, to exchange their sitting posture for an altogether recumbent one, to escape the pungent wood-smoke with which the atmosphere immediately became filled. It was then possible to observe that there was a dome of thatched straw overhead, and all around. The travellers, in fact, were in the interior of a grass-hut, fashioned very much like an enlarged beehive, having the same kind of low-arched entrance on the floor line, and measuring some 10 or 12 feet across, with a height of about 7 feet in the middle. The floor was hard and glistening with a rude cement, made principally of cow-dung. In the middle there was a circular ash-pit of clay, in which the smouldering wood was burning. But there was no chimney, or outlet of any kind for smoke, which found its way out as it could through the closely-packed interstices of the thatch. The only possible defence against its blinding and suffocating pungency was to keep eyes, nose, and mouth level with the ground, where the stratum of inflowing fresh air, entering through the low portal, prevailed.

There were a few rude earthen pots standing in one place at the side of the hut; a light iron-tipped lance or two, technically known as the Kaffir Assegai, and a long oval shield of ox-hide; and these constituted all the furniture of the mansion. Two straw mats were unrolled upon the floor, the saddles were placed at one end to serve as pillows, and then all was considered to be ship-shape for the night. In a few minutes two or three young men and lads, in addition to the more venerable owner of the cluster of huts, or kraal, found their way in, and seated themselves respectfully on the ground on the opposite side of the fire-place. In Kaffir etiquette squatting on the ground is what standing is with civilised people; it is the correct posture in the presence of superiors. Soon after a complete string of dusky women, old and young, naked with the exception of hip-fringes or aprons, straggled in, and grouped themselves round three-fourths of the circular background to increase the distinction and impressiveness of the reception. A few isolated ejaculations and broken phrases, in what, on the part of the two white members of the circle, was very imperfect Zulu-Kaffir—was all the communication that could pass between the guests and their entertainers, and this mode of expression had to be eked out by a very liberal allowance of pantomimic movements and gestures.

As about eight fatiguing hours had been passed upon horse-back, nearly the whole of them in pouring rain and many of them in the fury of a tempest, the question of commissariat arrangement very soon pressed itself into prominence. What could be had to refresh the flagging powers of the inner man? As soon as the idea was presented to the host, he hastened to explain that an ox was on its way to be laid at the feet of the distinguished visitors. The distinguished visitors, not quite seeing day-light through the ox under the circumstances, for they certainly did not feel equal to the task either of cooking the brave animal at the handful of burning sticks that was smouldering on the hearth, or of bolting it as a whole, hastened to waive the distinction, and as politely as they could declined that offering. The host then suggested a goat in the place of the ox; but the goat under the circumstances was quite as impracticable. It was merely the same difficulty in duo-decimo instead of in folio. Goat sanglant is not much more appetizing to civilized palates, in any degree short of starvation point, than ox sanglant. The first actual step towards a practical solution of the difficulty was then made by a venerable and well wrinkled black lady deftly insinuating herself through the low portal of the hive with a big-bellied, black, earthenware pot, which

was announced as "Tchuala" for the wearied "Inkosi," or white chiefs. Now tchuala is properly a liquid that in kaffir land takes the place of beer; shades of Allsop and Bass, save the mark! It is a by no means "refined" liquid in any sense of the word. It is made from an infusion of crushed millet seed allowed to stand in the sun until it ferments. In intrinsic nature it is a kind of half-and-half, of which one part might be stale unstrained gruel, and the other part sour and hard table-beer, and certainly requires a somewhat prolonged education both of palate and stomach to enable it to be received as a veritable and admissible food-substance. Old hands and adepts affirm that it is an excellent beverage. On this and some other occasions, the writer altogether failed in the strenuous and honestly made attempts to overcome repugnance that rose very nearly indeed to the pitch of nausea. As the loving-cup with the pledge of the Master of the Worshipful Company of Grocers touched the writer's lips on that more recent occasion, and the rim of the goblet was daintily brushed with the white napkin, the fragrance and bouquet of the Grocers' wine was by no means diminished by the vivid memory of the fragrance and bouquet of Kaffir-land tchuala in the black bowl that was redolent of the stale tchualas of half a century, with a rim that was habitually brushed by an endless succession of black lips, without any intervention of white napkins between. In the gas-lit and mahogany-furnished hall of the Grocers of London, and in the dim smoke-saturated hut of the Natal Kaffir, were at any rate the two opposite poles, the positive and the negative, of the science and art of fermented beverages.

R. J. Mann, M.D.

(to be continued.)

Salt.—The quantity of rock salt sent down the river Weaver in the year ending the 31st March, 1870, reached 67,410 tons of 26 cwt., and of white salt 901,158 tons; the total, 968,568 tons, is larger than in any of the years over which the returns of the Keeper of Mining Records extend. Worcestershire produced in 1869, at Droitwich and Stoke Prior together, 195,000 tons of salt. The Belfast Salt Mining Company raised 17,472 tons; and there is now another company raising salt, but no returns were received from it. The export of salt from the United Kingdom advanced in 1869 to 833,316 tons, but the value was only 430,914*l.*, being less than the value of the smaller export of the two preceding years. More than 240,000 tons were exported to British India in 1869, more than 214,000 tons to the United States, 94,000 tons to British North America, 74,000 tons to Russia. The total quantity of salt raised in the United Kingdom in the year was about a million and a quarter tons, the value estimated from the export return being 687,000*l.*—*Mining Record.*

WHO IS TO BLAME FOR ENGLISH COOKERY?

Much has been written and said on the subject of wasteful and unpalatable English cookery, as contrasted with the economical and *recherché* results of the French system of kitchen management. We have been told that all these delightful stews of which we have partaken in Paris dining-rooms are regularly produced in French middle-class households, at a cost greatly less than that paid by our David Copperfields for the hideous and underdone pieces of flesh prepared by their loving but mistaken Doras for their Sunday dinners. Again, if David dines badly on Sunday, we are told that he fares still worse at his eating-house during the week, where he bolts thin slices of roasted meat (previously parboiled, if report be true), with the inviting accompaniments of potatoes, mealy on the surface, but iron in the heart, and greens, which couple the attractions of sand and slugs with their miserably semi-cold condition. In fine it is plain that he is in no danger of suffering the terrible effects of cookery described by Davis, in the lines :

> Some man's evil
> Found the art of cook'ry to delight his sense :
> More bodies are consumed and killed with it
> Than with the sword, famine, or pestilence.

Then came the French exodus, and with it a French lady, who wrote to the *Daily News*, and lectured her English sisterhood on their carelessness and extravagance. After the publication of this letter, a suggestion appeared that the middle-class refugees might be utilised to the advantage of both parties in teaching our wives how to cook. Fired with this idea, and with bright visions of *sole à la Normande*, *rognons sautés* and *filet aux champignons*, we decided to introduce the subject to our own Dora. After some persuasion, the dear creature agreed to be taught, and forthwith we sallied out and at some trouble secured a lady willing to show the system. The eventful day having arrived, the kitchen was brightened by means of a prolonged dose of that "cleaning up" so dear to housewives, and a splendid fire was made to welcome the exponent of the new system. The French lady duly appeared; but when she looked around, she clasped her hands with a pretty little action of despair; and having exclaimed "*mon Dieu!*" stated that in such a "cellar," and with such a "furnace," her art was useless. All this set us thinking, and we came to the conclusion that our ladies are not altogether to blame for the state of English cookery. Our fair

wives and sisters have as good eyes, as clever hands, and as much brains as the women of any nation on the earth, but they cannot cook in the "cellars" and with the "furnaces" placed at their disposal. There is no use in concealing the fact that it is the sterner sex who are primarily to blame. It is the men who have the control of building; and do they do anything to make domestic arrangements good and comfortable? It is the men who travel abroad, eating and praising French cookery; but do they ever bring home any new ideas to their wives, or take lessons by observing foreign facilities or appliances? It is the men who keep shops; and do they endeavour to learn how to cut meat, and how to sell small quantities of articles at a time, so as to give our wives the opportunity of producing variety at a small cost? We fear the answer must be that they do nothing, give no facilities, take no observations, but wrap themselves up in their self-satisfied John Bullism, and say with a sigh that English ladies cannot learn. Let us see in detail a few of the obstacles that are placed in the way of our ladies by their grumbling spouses. In the first place, many of our houses are built in a neighbourhood, and of a size, which renders it probable that they will be inhabited by several families; and yet are constructed with most ingenious appliances for the discomfort of even one set of occupants! Passing over the badly-fitting doors, the damp walls to which the paper barely clings, and the floors that one dare hardly walk over—much less dance upon—let us glance at the kitchen. This apartment is placed in the basement, so that all the occupants may satiate themselves with the odours given off by their meals when cooking, which rise in a delicious steam, and penetrate to the airiest garrets. Then the kitchen (which by-the-bye from its situation and atmosphere of unwholesome heat is usually swarming with beetles) is generally divided into two parts. In one division is placed the fire for cooking, and in the other, at the farthest corner from the door, is found the water-tap, while the cupboards for pots and those for crockery are equally far apart, and the larder is hidden away in some distant nook, the nearer to an untrapped drain apparently the better. The so-called cooking range is an immense open fire, with a boiler at one side, which, when it does reach the stage of ebullition, requires continual replenishment from the tap in the back kitchen, and an oven on the other, exhibiting a most pleasing uncertainty as to whether it shall partially warm the meat or burn it to a cinder, according to the state of the wind and draught. Given, therefore, a fire, which with immense expenditure of fuel can only be thoroughly depended on to boil, and one water-tap to supply a

whole household, we ask where is the English middle-class lady with one servant, who can be expected to produce good cookery, even although, as Swift puts it, she

> Her love to household cares
> By shrill voice at noon declares,
> Warning the cook maid not to burn
> The roast meat which she cannot turn.

Next to the inconvenience of the house comes the unaccommodating nature of the tradesmen, and the higher we go in trade *caste* the worse we are served. A tradesman sells an article which "takes," or he opens a shop in a "good" district, and straightway he becomes bumptious and refuses to serve less than so many pounds at a time. What mild and gentlemanly reply would an English butcher make when asked to cut, say a pound of steak in three nice filets one inch thick, and of equal shape and size; or how would a greengrocer look on receiving an order for one onion, one clove of garlic, and one mushroom? But without this accommodation, how can the wife of a middle-class man make nice and economical stews? All this is well exemplified in the one article of cheese. Suppose that a lady of straitened circumstances were anxious to give her family a variety, how can she do it? If she went into a shop and asked for, say two ounces of Stilton, Gruyère, or Roquefort, she could not get it, and yet that quantity is quite enough for the little addition which she can afford to make to the day's dinner; besides, if she purchased half a Stilton, it would probably vanish by the industry of mites before it could be consumed. The middle-class French woman on the other hand would never dream of getting more than she required for the day, and her cheesemonger would not think it beneath his dignity to serve her. The idea of digging away at the same cheese day after day would be utterly repugnant to the notions of our neighbours across the Channel, where the small quantities of articles always sold without a murmur enable the ladies to give that great variety at a small cost which is so attractive, and which forms, as we are assured by King, the true foundation of good cookery:

> Not but that cooks and poets still are free
> To use their power in nice variety;
> Hence, mackerel seem delightful to the eyes
> Though dressed with inconsistent gooseberries;
> Crabs, salmon, lobsters are with fennel spread,
> Who never touched that herb till they were dead;
> Yet no man lards salt pork with orange peel,
> Or garnishes his lamb with spitchcocked eel.

Lastly, comes the want of observation and energy in domestic matters on the part of Englishmen themselves. Smith goes over to

Paris, eats his dinner of what he calls "four courses" for three francs, and comes back and tells his wife what a wonderful people the French are; but it never occurs to him to enquire into the arrangements which produce such variety, because Smith, as an Englishman, is of course above mere culinary considerations. He can go to his chop-house and grumble, and he can come home and growl, but any effort on his part to make himself acquainted with foreign arrangements is out of the question, seeing that he loftily declares himself to be too busy to think of such trifles. Smith's philosophy is an improvement on that of the sage Aristotle, who put it on record that "it is less rebuke for a man to be busy to know what is done in his kitchen, than for a woman what is done without her house." We have said that he grumbles at his chop-house fare, but he has not the courage to do so openly. He sits quietly down and, fired by his foreign experience, orders a salad, for example, but he never refuses to take the little plate of undressed greenstuff placed before him under that name and at an exorbitant price. If Smith insisted on good cookery at his chop-house, the custom of variety and small quantities would soon spread to his home. In a word, we say, place the ladies of England in houses properly constructed, with convenient and pleasant kitchens in a sensible part of the house, give them a copious water supply on every landing, accommodating tradesmen who will cut and sell any quantity, and above all interest in their productions and praise for their efforts, and they will quickly learn to produce as good cookery as their Continental sisters.

J. Muter, Ph.D.

Unseasonable Salmon.—The mischievous practice of exporting "kelt" and "unspawned" salmon to the foreign markets has, we are glad to hear, received a check during the last few days which is likely to put a stop to this illegal traffic, by the seizure at Billingsgate of no less than seven boxes, containing 84 salmon, and weighing in the aggregate 976 lbs. The fish for the most part had evidently been taken in the upper waters, as the majority showed the mark of the gaff. Since the commencement of the salmon season 288 fish, weighing 3,738 lbs., have been seized. Most of the salmon have come from Irish rivers, and we trust, now that the authorities in England are endeavouring to stop the trade in unseasonable fish, that the Irish inspectors and river conservators will keep a sharp look-out, and place as many impediments in the way as possible, so as to prevent the export of kelt fish from the Irish ports. Mr. Frank Buckland is carefully watching the English ports, and we are glad to learn that the fishery officers at Billingsgate and some of the large salesmen have given the inspectors every assistance in their power to prevent the fish from passing through London. Several casts of the most remarkable kelts have been made by Mr. Buckland for his Museum of Economic Fish Culture at South Kensington.—*Times*.

CONSUMPTION OF FOOD IN FRANCE.

The following note on the consumption of food in France, written a short time before the outbreak of the present war, will probably at this time be of some interest.

France possesses many climates, and it will generally be found that the physical condition of the population as regards the amount of nourishment required depends in a great measure upon their influence. Although an arbitrary standard of nourishment may be fixed, below which a population cannot be healthy or robust, it does not follow that the influence of climate may not in many cases modify this standard, and that one population, living upon half the amount of dry food said to be requisite, may not in consequence be as healthy and robust as the other. The observations of Dr. Cruveilhier, however, seem to point out that notwithstanding the different climates in France, and taking into consideration their influence, the population is in general underfed. It is not asserted that the population of the last century, which is admitted to have consumed much less food of all kinds than the present one, was less healthy and robust; indeed it may be questioned whether it was not even capable of more endurance, and was not possessed of more physical activity. The wars of the First Empire, which entailed so great a drain upon the population, account in a great measure for its deteriorated physical organisation, more so, perhaps, than any deficiency in nourishment. This fact is generally overlooked in considering the condition of the French population; and although it may consume a greater quantity of animal food at present than it did formerly, it has not recovered from the blighting influence of this drain upon it, nor can it be expected that it will do so by an augmentation of diet, until other social causes which supervened upon its exhausted state are removed. The French peasant is generally frugal, and undoubtedly lives upon very much less than his neighbours. He has, perhaps, greater facilities for so doing than others, where the climate is mild, and the natural productions of the soil are so numerous and varied, so healthy and nutritive, and obtained at such little cost, that existence is rendered comparatively easy. His natural intelligence also aids him greatly in finding the best and most economical mode of preparation,

and of utilising what others would reject. The peasantry in the south live chiefly upon fruit, vegetables, and fish, the chesnut and potato being much used; and the cooking is really excellent among them. They are, no doubt, inferior to the English peasant in physical powers and in capability for work, but it is doubtful whether animal food would alter these defects, more especially as the nature of climate must be taken into account. An arbitrary standard of nourishment cannot, therefore, be made universally applicable. In theory only, but not in practice, it applies. The conscription is, doubtless, the severest burthen on the land, and is perhaps more injurious to rural life than any other cause. The sons of the proprietors taken from their homes, soon lose, in the majority of cases, all attachment to them, and all interest in the soil. This appears to be more the case in France than in other countries where it is sought in some measure to localise military service, and thus remedy the evil. The necessity of adopting means in order to relieve the agricultural population from the pressure of the conscription, and from certain social evils resulting therefrom, have been pointed out in strong language.

Lime Juice.—The importance of lime juice as an anti-scorbutic, especially on board ship or in cases where it is impossible to obtain a sufficient supply of fresh vegetables, is a matter of the highest moment. Unfortunately, however, this useful article had such attentions paid to it by our friends the adulterators of food, that the large bulk of the juice used was juice only in name. Compounds of tartaric acid and sugar flavoured, or mere solutions of citric acid fortified by vitriol, were formerly much in vogue, although such practices are now, it is to be hoped, rendered impossible by a stringent enactment. But even at the present time the addition of proof-spirit to lime juice is permitted, to give it keeping properties. This is an admixture which must prevent its use by a large and estimable class of our fellow-citizens, and that it is really uncalled for, is proved by a set of samples which we have just examined. These were sent us by Messrs. L. Rose and Co., of Leith, and proved on analysis to be thoroughly genuine, and all quite free from alcohol. Firstly, there was the pure lime juice, which possessed a specific gravity of 1·0255, and was found to be excellent in every respect; and secondly, there were two preparations of the juice in more popular forms, and ready for use. They were called respectively "lime juice cordial," and "lime juice champagne." The former was a syrup containing a notable quantity of lime juice, and the latter was an effervescing preparation of the same ingredients, which was really an admirable imitation of champagne minus the alcohol, and plus the important anti-scorbutic properties of limes. Both of these preparations would form excellent and wholesome summer beverages. We have also to acknowledge a sample of "orange quinine wine," from the same firm, which gave, on analysis, a proper proportion of pure quinine, and was an excellent and palatable way of taking that bitter but useful alkaloid.

THE HISTORY OF ENGLISH FOOD ECONOMY.

Part III.

The subject which we are pursuing is the history of food economy in England, and having arrived at the epoch of the great peace in 1815, we have found that there has been no administration of the national resources, the common property of rich and poor, the food which is wanted for all, which belongs to all, and the common share in which is sure to be found out in moments of peril, like those of Paris, where every morsel, formerly wasted, has its value and its destination. In a country which has no careful and far-seeing administration, it must remain stationary, unless acted upon by public opinion.

In India generally there is not what may be called a living public opinion, with its ebbs and its flows, its diseases, its palsies, and its fevers, and the consequence is, so far as husbandry is concerned, that it has been stationary for thousands of years. If we want to know what the early rudiments of civilization were, on which we have no books, and which were developed thousands of years before Hesiod wrote his "Weeks and Days," we shall find the authentic records in the tools now used in the field of the Hindoo ryot. In England we are relieved from such a condition by the influence of public opinion, and we are self-satisfied with it, for we profess that the country is governed by public opinion.

To some length this is good and true, but yet we are so far blind that we call upon public opinion to do what it cannot do for good, and more particularly in such a department as that of the national economy, which requires constant care, which must husband the present and look out for the future. Public opinion of itself cannot do this, for public opinion is fitful. It not only has its hot fits, but what are much worse, its times of utter apathy. This is notably seen in another branch, that of our national defences, for which we have thought it necessary to constitute an administration,—an administration, it is true, of ineffective and it may be said disgraceful character, as most things are in England from want of system and timely forethought, but still an administration. Public opinion has not been without its influence on this, and what has public opinion done? Public opinion has sometimes and most generally ceased to concern itself with the matter, except when horribly awakened by the emergencies of the Crimean war; and public opinion has allowed the national money to be wasted, and

at the same time the defensive means to be diminished. At times, under the influence of some small body of talking economists, a raid has been made on useful establishments to lessen the demand on taxation, and the useful has fallen with the wasteful. Sometimes under the lead of philosophers, whose attainments do not include a knowledge of human nature, of men, of women, or of children, of races or of individuals, of the honest or of the criminal class, public opinion has acquiesced in the doctrine that mankind has reached perfection, that war is impossible under modern enlightenment and civilisation, and that the reign of universal peace and quakerdom is accomplished.

This has nothing to do with food at the moment (though it would have very much to do with it if we were involved in an actual war), but it is an illustration which we can all of us well enough comprehend. Our most enlightened brethren and allies, under the guidance of the leading statesmen of the world, and their compeers and satellites, have been carrying out the most barbarous precedents of ancient and long accustomed warfare under pretexts as unjustifiable as were ever recorded in history. Public opinion here has consequently received a reminder that human nature is still human nature, the subject of discordant passions, the sport of man's vices and woman's waywardness, and we have to prepare ourselves for the possible contingencies. All this has taken place under what we conceive to be the enlightened government of public opinion in this country, and if there had been no Admiralty and no War Office existing, by this time every dockyard would have been shut up, every ship sold that had not rotted, every remaining barrack and fort been pulled down, and every gun melted up. Administration such as it is has here saved us, and public opinion comes into operation to strengthen the administration. This is what we want with regard to food economy, viz., administration which shall not supersede public opinion, but which shall receive its good impress, and above all that shall keep awake when opinion sleeps or is sick.

Public opinion necessarily rests on public intelligence, and that means in this country public ignorance, leavened by the occasional influence of truth, and the much more active influence of charlatanism. We want no other test as to public ignorance than our present condition as to food administration, and that in the pages of this *Journal* a series of efforts is being made for the realisation of measures which may be said to have passed beyond the limits of proof and experience, and which still have to be realised in this country. It is therefore the history of public opinion which

we have now to observe in its influence on that period of improvement which has passed since the great peace, and after all to recognise how little public opinion has acted, and how much chance has operated for good or for evil. If indeed at this moment we were subjected to an invasion, which we well might be, we should find ourselves crippled in our food supplies, and in our means of dealing with them, wasting in the very beginning what was most needful in the end.

On the peace being established, this country suffered more than any other in Europe by the reorganisations that took place. In other countries the change was from war to peace, to improved social order, the establishment of credit, and the restoration of enterprise; the fields were safely tilled, and manufactures sprang up. In England two very great and powerful interests experienced severe suffering, and communicated that suffering to other classes of the community. Fortunes gained by corn and sugar, and, it may be added, by paper money making, had given their owners peerages and seats in parliament. The peace time touched all of these in its operations, because they had most generally dealt improvidently, and all the peers, planters, and bankers had been living in unwarranted luxury, they and their wives, their sons, and their daughters; many estates were already heavily mortgaged, and, in the attempt to bolster up a fictitious prosperity, they involved themselves still further. Many branches of manufacture, particularly the textile manufactures, by getting access to more markets, underwent expansion after the peace, but this only contributed to the general confusion. Having to compete with adverse exchanges and low rates of labour on the Continent, the use of machinery was pushed at a period when the working classes here were experiencing a time of transition. Indignation was raised against power looms and machinery, and the Luddite riots directed against manufacturers undoubtedly impeded for many years the extended use of improved agricultural machinery. The Swing riots are indeed in one sense a testimony that agricultural machinery had been retarded for twenty years.

One great evil after the peace was the forced paper currency, based upon illegitimate finance, and which contributed in various ways to the public suffering. It was evident that we had to come to a currency of coin, and to restrict the fabrication of inconvertible paper; but the whole corn interests had to be let gradually down, and to save them, the whole community and the whole framework of society was jeopardised. Farmers, who had renewed their leases as tenants, and sons of farmers, who had taken new leases, were

tightly held to their rents by the landlords, for their estates were under mortgage, and they still had their standing in fashionable and political society to maintain. The bankers helped them for a time, being mixed up in their responsibilities by the issue of one-pound notes, but there were no longer the same facilities for keeping notes in circulation; they came back under usual circumstances, and particularly under commercial pressure.

Thus it will be seen that the funds of the agricultural classes, which, when they were thriving, had been applied to improvements, were no longer available. So far from it, they made a severe inroad on the labour fund, profiting by the control which they had over poor-rates. During the war, irrepressible necessity had made it requisite to maintain the country labouring classes, at least on a sufficient supply of bread, by what was called the scale; but the farmer, unable to resist the landlord, indemnified himself from the labourer. Thus the landlords were suffering as well as the farmers, the labourers, the bankers, and all whose savings were absorbed in this way. Improvement was checked and the attention of the Legislature was chiefly directed to what was called agricultural distress, so far as it was not absorbed by the manifestations of public mutiny and disorganisation.

A weak ministry, responsible to false principles and corrupt motives, found itself face to face with every enlightened thinker, and with the exasperated and starving labourers and hand-loom weavers. They met the emergency by repressive legislation and the exertion of the public force; but what saved the country against the ministry on one side and the working classes on the other, was the growing prosperity of the manufacturing interests, which by 1824 had so far advanced as materially to influence the whole aspect of affairs. In the meanwhile, many of the banks had collapsed, and after 1825 the remnant, previously dead-rotten, had to be swept out. The mischief which these failures caused was something truly disastrous. The savings of the provident classes during many years were engulfed, and much social misery was the consequence. The injury spread beyond the agricultural classes to those concerned in manufactures, for those under advances from the banks were sold up to meet the demands. It is indeed extraordinary to notice how the country recovered.

The agricultural classes sought to save themselves by protective duties and various scales; but the steady growth of the manufacturing population constituted an adverse interest. Public opinion was, however, casual in its influence. Enlightened and thoughtful men had, during the war, laid down the principles of political

economy to be observed, but it took years before their application could be obtained. There was a strong mass of powerful interests pledged to protection, and the thinkers had to make headway against this resistance, and their condemnation as radicals, revolutionists, and reformers. Against them every engine of abuse was directed, and the powers of the law and society perverted.

The great lesson to be gained is, that from 1815 to 1830 public opinion was comparatively powerless; that for want of an organised administration agricultural improvement was retarded, and that nothing but the chance intervention of manufacturing prosperity ultimately restored the balance. These are salient facts to be borne in mind, for it is not because we are no longer in 1815 or in 1830, that we have made ourselves safe and can afford to cast history and experience on one side. Of course agriculture did not die between 1815 and 1825, and of course some improvements were introduced. For instance more commons were enclosed and cattle shows flourished. There was, however, no direct action within agriculture itself, such as a Ministry of Agriculture would have effected, and the effective and beneficial action was obtained indirectly by the manufacturing interests, and in particular as a consequence of efforts made for their own immediate advantage.

It is well to see that no interest in a country can prosper without general good, as none can suffer without general loss. The real sources of agricultural improvement were purely of an industrial origin. Among these are to be placed the repeal of the Bubble Act, the authorisation of joint-stock banking, the freer introduction of raw materials and customs reform. The repeal of the Bubble Act allowed joint-stock enterprise to be more freely pursued, and the new banks better provided for the economy and safety of capital. It is, however, after 1830 or rather 1835, a period of twenty years after the peace, that effective influence for good began. The manufacturing classes in their prosperity absorbed many of the suffering parish labourers, and above all held out to them the hope of emancipation. Surplus labour in the parishes was provided for, and the accumulated wealth of manufacturers enabled them to replace many of the bankrupt landowners by foreclosure on their estates or by redemption of mortgages in furnishing an heiress for a wife. Many retired tradesmen became farmers and set up their sons in farms. It was not only new wealth which was provided, but what was worth far more, the leaven of enterprise, communicated by successful and hopeful men.

In twenty years the situation had been mended, leases had run out and been renewed on more suitable terms, landlords had been

changed, labourers had been changed. The position after 1830 was, however, by no means a clear one, and the difficulties to be encountered, and some of which were surmounted, were great. A change in the Poor Law was a necessary consequence of the state of affairs. The farmers had succeeded almost by a universal conspiracy in reducing the rural population to a general condition of serfdom and pauperism, profiting by every error and shortcoming of the law of Elizabeth to make the administration more dangerous. In the parish vestry the farmers ruled; the landlord was an accomplice for his rent; the parson could not resist; the publican and shopkeeper durst not; cottagers were themselves under the dispensers of the double supplies of daily bread, wages, and poor relief; every agricultural labourer was a pauper, tied down to his parish, and colonies of sturdy paupers, vagrants, and harlots were reared and maintained in the workhouses, and thence despatched to infect the town populations, and aggravate the consequences of their own evils and mismanagement, and the immigration of the Irish population. The remedy applied was a violent one, and, as usual, about as much good was swept away as evil, even if not more, for all ties of friendly sympathy between the ratepayer and the unhappy pauper, widow or orphan, were abolished in town as well as country, and the unfortunate suffered more than the vicious. Hence came a revulsion of public feeling against the new Poor Law, which has not been attended with any adequate compensation for its evils; in the agricultural districts, at all events, it effected a servile emancipation, but it destroyed the elements of political training and organisation throughout the country by abolishing the parish vestries and superseding one more link of association between rich and poor.

In an economical point of view it came to this, that the farmer, like the manufacturer, had to pay his men in wages and not pay them part in poor relief and part in wages. This threw the farmer more on his own resources, and compelled him to face the application of machinery and artificial manures, and it has been by these to a great degree that the increase of food from 1835 till now has been chiefly obtained.

Thus far it will be noticed that our history from 1815 till 1835 has been to a great degree a blank so far as augumented food resources are concerned, but it is a page at which we must look if we wish to understand those influences on subsequent improvement, which are still operating, and from which we must hope for future progress.

Hyde Clarke.

TRANSPORT OF CATTLE BY RAILWAY.

The loss which takes place in this country, in consequence of the present method of transport of cattle by railway, particularly from the want of proper supplies of food and water during long journeys, is very great, and the subject is one which urgently demands public attention and legislative interference. Economical considerations, and those of humanity, concur in leading to a decided conclusion against the existing system, by which a vast amount of grievous cruelty is inflicted upon poor animals, —cruelty for which there is no excuse, and which cannot be contemplated without indignation. In defence of the ordinary practice, nothing can be said except that in order to amend it railway companies would be under the necessity of incurring some expense in the improvement of their trucks, perhaps also a little expense in providing additional attendance of servants at railway stations, although this would be a very inconsiderable item in their accounts. The saving to the country would be great from the better condition in which the animals would arrive at their place of destination, and the additional outlay of the railway companies would be amply covered by a very small increase of their charge for the transport of cattle, which the owners of the cattle might be expected gladly to pay, as the change would be greatly to their advantage. They suffer heavy loss at present by the death of cattle which sink exhausted in the crowded trucks, and are trampled upon by those still able to stand; still more by the deteriorated condition in which cattle arrive at the town where they are intended for slaughter, or at the country station from which they are to be sent to the grazier's fields. It is not on them, however, that the heaviest loss ultimately falls. They are at least partially compensated by the increased price of fat cattle and of meat, and the public have to pay this increased price in all parts of the kingdom. Fat cattle are often sent by railway to the town where they are intended for use, from some very distant part of the country, and having been confined in a house or farm-yard for perhaps twelve months, their legs, through want of exercise, are totally unfit to sustain the great weight of their body for any longer time than that required for taking food and water, after which they would naturally lie down either to sleep or to chew the cud, and remain in this posture till the want of food or water caused them again to

rise. Yet such cattle are driven to a railway-station, put into a truck which is not divided into compartments, and so crowded together that they are utterly unable to lie down, and in this condition they remain during a journey that in many cases is not performed in less than sixty or seventy hours, and sometimes occupies even eighty hours or more; for the railway transport of cattle is not so expeditious as that of human passengers even by the slowest of ordinary trains. To what fearful torture must these poor creatures be subjected! To make it worse, they have hitherto been in general unsupplied either with food or water during the whole journey, and their sufferings both from thirst and hunger must be grievous. Cattle subjected to such treatment have often been seen to stagger and fall, and then to jump up again with staring eyes and quivering limbs, evidently in dread of being trampled to death by their companions. What wonder is it that when they arrive at the place to which they have been sent, they are in a diseased state, so that their flesh, which would have been of first-rate quality if they had arrived as they left the farm where they were fattened, is no longer really good for human food; and if it is to be used at all, must be used at once, as it undergoes decomposition with extreme rapidity? No doubt, a great part of the meat condemned by the inspectors of markets is condemned for no other reason than that the animal has got into a state of disease in the railway truck; and living cattle condemned in the market are mostly, it may with confidence be affirmed, liable to condemnation from the same cause alone, whilst diseases thus originated not unfrequently spread where cattle suffering from them are pastured, and thus loss is incurred by farmers and by the country. How great the loss is it would not be easy to estimate; but one significant fact may be mentioned. It was lately reported in the Edinburgh newspapers that 100,000 lbs. of beef had been condemned in the Edinburgh market in a year; also that, ordinarily, 25 living oxen are condemned in each month. The 100,000 lbs. of beef, if it had been in good condition, may be reckoned as 5,000*l.* sterling, and the 25 cattle as worth 20*l.* each, or 500*l.*, in all making 6,000*l.* a year; so that adding these sums together, the amount is 11,000*l.* Now, let us consider the population of Edinburgh and its proportion to that of the other cities and towns of Britain, in the markets of which we may suppose that beef and living cattle are condemned in somewhat similar proportion, and the total at which we arrive is of startling magnitude, and such as to show the importance to the people of this country of a great change in the system of transport of cattle to our markets. The

loss in sheep and mutton is also, no doubt, large; and it is by no means an improbable supposition that all the live animals imported from foreign countries do not supply us with a greater amount of food than is thus absolutely wasted; for although there are occasional instances of animals sent to market, and condemned there before or after being slaughtered as unfit for human food, which have become diseased in byres, farm-yards, or fields, this is by no means a thing of common occurrence; and in nine cases out of ten it may safely be taken for granted that the diseased state of the animal, and the unwholesomeness of the meat, are wholly to be ascribed to the tortures during the transport from the place of fattening to the place of slaughter.

Feelings of humanity sometimes lead the managers at railway-stations to give food or water to animals apparently exhausted by suffering. Some years ago a special cattle-train reached Edinburgh, with cattle evidently much exhausted, and Mr. Brown, goods-manager of the Edinburgh, Perth, and Dundee Railway Company, —we delight to record the fact to his honour,—collected as many porters and pails as possible, for the relief of the poor thirsty animals. They drank the water greedily, and evidently with great benefit; and but for this humane attention, entirely voluntary on Mr. Brown's part, they must have gone on to the place of their destination, at a considerable distance, in a state of continually aggravated suffering. The difficulty of this process is, however, so great, that it is only in cases where extreme distress is apparent, that even the most humane of railway officials can be expected to attempt it. An Act of Parliament was indeed recently passed, the "Contagious Diseases (Animals) Act," which requires that animals transported by railway should be supplied with food and water, whilst particular regulations on this subject are left to be prescribed by Orders in Council; and an Order in Council of 12th May, 1870, requires that all railway companies shall at certain stations named in a schedule, "provide water for animals carried, or about to be carried, or having been carried, on the railways of the company." But this Act of Parliament and Order in Council are practically inoperative, or nearly inoperative, and must be so whilst there is no provision for supplying water in the trucks; for either the animals must be untrucked in order that they may drink, and retrucked after drinking, or water must be supplied to them individually in pails, both of which are laborious and troublesome processes.

J. Montgomery.

[to be continued.]

THE KINSALE MACKEREL FISHERIES.

Some ten years ago an energetic Englishman suggested that an untold mine of wealth existed off the south coast of Ireland in its undeveloped mackerel fishery. That favourite fish had year by year been allowed to visit its shores without the slightest attempt being made to utilise them, and the few persons who were in the habit of fishing for mackerel did so with the most crude appliances, and principally as bait for the coarser descriptions of fish, such as hake, conger, and ling, which abound round the whole line of coast from Youghal to Cape Clear.

Supported by the capital of a gentleman well known in the Isle of Man as one of the largest net manufacturers in the Kingdom, an opportunity was afforded of practically proving the value of the fishery, and four Manx luggers were provided with complete trains of mackerel nets, nearly one and a half miles in length, specially made for the purpose, and of a much larger mesh than generally used. From this small beginning rose the present fleet, now embracing 200 Manx, Cornish, and Irish boats, manned by upwards of 1,600 hardy fishermen, and giving an enormous amount of additional employment in packing, icing, and carrying the fish, as well as in manufacturing nets and the building of fishing boats.

The historic and beautiful harbour of Kinsale, a few miles inland from the spot so well known to mariners as the "Old Head," has been made the dépôt of the Irish mackerel fishery, and presents, during the months of March, April, May, and June a scene which it is difficult to describe, and which would be well worthy of a painter's art. During this busy period the fishermen hold, day by day, a regular regatta of their own, each boat, with every stitch of canvas spread, striving to get into the harbour with the utmost speed to secure the highest price for its well-earned freight. To add to the excitement of the scene, some forty or fifty yawls, of from four to six tons burden, each manned with crews from Kinsale and the surrounding coast, and having on board the representatives of English fish factors from London, Liverpool, Birmingham, Manchester, Leeds, Hull, Lowestoft, Yarmouth, and Dublin, vie with each other, so as to enable those on board to make their purchases before the boats even enter the harbour. Competition may truly

be said to be the life of trade, and thanks to the successful efforts which have been made during the past few years, the baneful monopoly which had previously existed has been completely put down, and free-trade in fish is now universal at Kinsale. This has been principally effected through the energy of Mr. Forster, an Englishman, who at once saw that the first step was to improve the transit accommodation, and who with that view organised direct steam communication between the fisheries at Kinsale and the English railway systems, eventually selecting Milford and the Great Western Railway Company as offering the quickest and most expeditious route. From the excellent arrangements made by that company during the past season, it was so largely patronised that upwards of 39,000 boxes of mackerel passed over the line, the greater proportion of which were sent to the London and Birmingham markets, increasing the total received at Billingsgate from 8,000 boxes in 1868 and 1869 to upwards of 30,000 boxes in 1870.

The great advantages derived from this direct communication can be best explained by stating, that under the old system fish intended for the London markets was first sent to Cork by railway from Kinsale, then carted through that city to the Great Southern and Western Railway for conveyance to Dublin, and again carted through Dublin for conveyance by steamers to Holyhead. The condition in which the fish used to arrive was so bad that it was sometimes unsaleable, and being so depreciated in quality, the returns could not but be unsatisfactory, and this of course reacted on the fishermen. The improved transit, and superior condition in which the fish arrived by the new route *viâ* Milford, soon made itself felt in inducing larger numbers of English fishmongers to go into the trade, and these now nearly all avail themselves of the direct communication, booking their fish on board the steamers at Kinsale to all the principal towns in England; this to a great extent does away with the middle-man, or mere speculator, and brings the fishermen in direct communication with the salesmen in England, thus enhancing the selling value of the fish by the competition created. To carry out this trade it is necessary to obtain large quantities of ice from Norway for the purpose of preserving the fish in its transit, and upwards of 2,000 tons of ice were imported during the past season.

The great success which has attended the present fleet of 200 vessels, representing a money value at Kinsale of upwards of 60,000*l.*, is inducing a great many people interested in the east coast of England fisheries to turn their attention to Ireland, at a

period of the year when little employment exists on their own coasts, and as large numbers of boats are preparing to engage in the Kinsale fisheries, it is fully anticipated that the fishing fleet for the ensuing season will number upwards of three hundred boats. But it is not only with reference to the increasing supply of mackerel that Kinsale and the fishing grounds on the south of Ireland can hereafter be made available, for they possess unfailing supplies of cod, hake, ling, and conger, and efforts are now being made to induce the long-line fishermen along the coast from Youghal to Cape Clear to concentrate at Kinsale. This would in itself develope a large trade, and give employment during the months of April, May, and June to the class known as half fishermen, half farmers, who from want of local demand are generally idle during those months. Perhaps the greatest field of all on the south coast of Ireland lies in its herring fisheries. These in past years gave much useful employment, but have latterly been totally neglected, though some of the Manx fishermen intend this year to bring their herring trains with them, and during the season, when the mackerel fishing is slack, will turn their attention to herrings, anticipating the supply from the west coast of Scotland.

In connection with the fisheries of Ireland, the experiment which Miss Burdett Coutts has so generously made of throwing open Columbia Market, as a wholesale and retail fish market, must not be lost sight of, for it opens an extensive outlet for every description of fish, and by judicious encouragement of the long-line fishermen on the south coast of Ireland to induce them to concentrate themselves at Kinsale during the mackerel fishing, an enormous increase will be made to our supplies of food.

As a contribution to the literature of sieges, it may be mentioned that the American Indians stave off hunger and thirst by a mixture of the juice of tobacco, calcined shells of snails, cockles, and oysters, which they make into pills, and dry in the shade. When they go upon a long journey, and are likely to be short of provisions, they put one of these pills between the lower lip and the teeth, and suck at it, and in this way keep off hunger and thirst for four or five days. In the Vatican Library is a MS. containing the following recipe, called the Epimenidian composition, so called on account of the sea onion which enters into it. The onion being boiled, washed, and dried, was cut into thin slices, to which a fifth part of sesame was added, and a fifteenth part of poppy. It was then worked up into a mass with honey, and divided into portions as big as a walnut, of which a dose of two per day quite took away the appetite. We do not, however, learn how long the vital powers were sustained by this treatment.

PRESERVED VEGETABLES.

Some persons find a great charm in being able to put upon their table vegetables, fruit, or other things, at a time of the year when they are what is popularly called unseasonable. Green peas and strawberries at Christmas are their great ambition, and since demand creates supply, we occasionally see some feeble, sickly-looking, untimely fruits of the earth exhibited at fabulous prices in the central avenue of our chief fruit and vegetable market. It is more than probable that the whole of the charm lies in the costliness of the articles; certainly there is but little pleasure in the eating of them. It is the guinea a pint and not the peas, for which purchasers desire to take credit. If this be so, and a process of treating vegetables so that they will keep for any length of time, and yet retain their pristine virtues, has been discovered, luxury may bite its lips with vexation, for there will be no reason, at least on the score of expense, why Jack Plane, carpenter, shall not have peas with his Christmas beef or goose, as well as with his June lamb or duck.

I have before me now (thanks to the kindness of the inventor of the process, Mr. Buchanan), vegetables of various kinds, some of which have been preserved as long as two years, most of them being equal in appearance and flavour to some which were gathered only yesterday. Many attempts have been made at preserving fresh vegetables, but none seem to have at all come up in result to the one of which I am writing. Up to the present, heat has been the great agent for getting rid of the moisture, the only thing with which it is necessary to dispense to ensure preservation; but the application of heat must more or less cook the vegetables, weaken and injure their quality, and destroy their freshness. Even upon those that we have in tins, and which are supposed to be uncooked, the heat used to cause a vacuum acts in a deleterious manner, and we get them in a vapid and unsatisfactory condition. Mr. Buchanan's process is a cold dry one; and while the moisture is completely abstracted, the other matters are left perfectly untouched and unaffected. Take spinach, a delicate and easily spoiled vegetable. It is here presented in a desiccated, or dried state. Its natural green colour has been scarcely, if at all, affected. The process has simply dried a pound of it, until it looks like a cupful of

magnified green tea. Putting it into some cold water, with some salt, boil it till it breaks easily, and is tender; when it begins to sink, which is in about ten minutes, it is done enough. Then take it out, for if left in the water the colour spoils; strain it in a cullender, without squeezing, as that would render it dry and hard, and chop fine, adding a piece of butter; and now that it is turned out, neither from its appearance, smell, nor taste, could any one tell that it was not fresh gathered to-day, instead of, as stated, two years ago. The pot-herbs are equally as good; the carrots have lost some of their colour, but none of their flavour; the parsnips are perfect; so are the celery, onions, and leeks. All these are cut up as for use, in a stew or soup. When so used with freshly-gathered herbs, it is almost impossible to tell the one from the other. This process seems to be exceedingly deserving of attention. Apart from the power of being able to put upon the table at any season and at a moment's notice any vegetable that may be desired, it affects largely the utilisation of much waste fruit and vegetable, and affords a new means of keeping our army and navy supplied with a very necessary portion of their commissariat. What a precious boon a few tons would have been to the helpless residents of besieged and starving Paris!

Anne Isabella Larkins.

The seeds of the wild liquorice (*Abrus precatorius*) were originally brought from the West Indies. It is a twining plant now common in India and other eastern countries, and belongs to the papilionaceous division of the natural order *leguminosæ*. The English call it wild liquorice, and the French *liane à réglisse*. There are several varieties, and three differently coloured kinds of seeds are well known,—black, white and scarlet. The last mentioned have a jet-black spot at one end, and as they are very hard, glossy and brilliant, they are a good deal in request as beads for necklaces and other ornaments among the Hindoos. They are called rettiweights in India, and are used by jewellers and druggists, each seed being popularly supposed to be equivalent to one grain. But Dr. Mason states that he has weighed many of them, and found them to vary from one to two grains. The native goldsmiths are said to make an adhesive compound from them which is employed in the finer work of jewellery. Some parts of the plant are applied to medicinal purposes. The root is used as a substitute for liquorice, and Lunan says that a decoction of the leaves is drunk in the West Indies instead of tea. According to Linnæus, the seeds are very deleterious, but as the Egyptians use them for food, they can hardly be so injurious as the great botanist has led us to suppose. As a plant, the *Abrus precatorius* does not possess much beauty, and its pale purple flowers are neither gay nor striking. Mr. Gosse says that it is a common-hedge climber in Jamaica, and it is doubtless equally plentiful in other islands of the West Indies. The derivation of the generic name is from *abros*, pretty, in allusion probably to the beauty of the little seeds; and Loudon says that the specific designation, *precatorius*, is due to the fact of their being used as beads for rosaries.

LANCASHIRE LIFE IN THE MIDDLE AGES.

The *Food Journal* for the months of June and July during the last year contained some articles on the mediæval clergy, and the mode of life which they were accustomed to follow. As retrospective comparisons are often of great interest, it is proposed to resume the subject with an occasional description of the manners and customs of our ancestors. Lancashire is particularly adapted for such an one, as it is a county which shows greater progressive movements than any other, while at the same time it is exceedingly conservative in its old traditions. It has a life of to-day running side by side with that of yesterday, and even in the large manufacturing towns, there is a curious mixture of primitive northern simplicity with the keen restless shrewdness that has made Lancashire what it is. That very character which has always marked the sturdy north country folk, has produced the tenacity of custom and habits that still linger in many of the villages, in the shape of wakes and rushbearings.

Hospitality was ever the great characteristic of the county, and the magnates kept royal houses and spent large sums even in those days, when provisions were cheap and money went a great deal further than it does now. The first Lancashire noble of whose household we have any detailed account was Thomas, Earl of Lancaster, whose household expenses for the year 1313 are still preserved amongst the corporation papers of Pontefract. We learn from them that the disbursements of the establishment were 7,359*l.* 13*s.* 0¾*d.*, and as silver was then worth 1*s.* 8*d.* the oz., the total sum for twelve months amounted to about 22,000*l.* of our money. There are some curious items in the list, viz. :—

To 6 barrels of sturgeon	£19	0	0
6,800 stock fishes so called	41	6	7
1,714 lbs. of wax, vermilion, and turpentine	314	7	4½
2,319 lbs. of tallow candles for household, and 1,870 of lights for Paris candles, called perchers	31	14	3
100 pieces of green silk for knights, 14 budge furs for surcoats, 13 hoods of budge for clerk, 75 furs of lambs for liveries in the summer, with canvas and cords to trim them	72	19	0

The expenses of the kitchen and the buttery amounted to 3,405*l.*, an immense sum when we know that by the royal procla-

mation the best grass-fed ox (alive) could not be charged more than 16*s.*, the best grain-fed ox 24*s.*, the best fat cow (alive) 12*s.*, the best hog of two years old 3*s.* 4*d.*, the best shorn mutton 1*s.* 2*d.*, (the same price as it is now per lb. !), the best goose 3*d.*, the best capon 2½*d.*, the best hen 1½*d.*, the best chickens two for 1½*d.*, the best young pigeons three for a 1*d.*, twenty eggs for 1*d.* With such prices as these, we may almost excuse a little waste (as doubtless there was) in Thomas of Lancaster's kitchen. It must be remarked, however, when we envy the cheapness of those days, that wages were in proportion, so that the working classes did not live in such luxurious plenty as may be imagined. A curious comparative table of prices given in Baines' Lancashire, shows us that in 1272 a labourer's wages were 1½*d.* a day, and the cost of grinding wheat was ½*d.* per quarter. In ludicrous contrast to this we learn that a Bible in nine volumes cost 40*l.*, that the pension of the King's apothecary was 6*d.* a day, a priest's stipend with cure of souls was 5*l.* 6*s.* 8*d.*, and salt in the year 1315 went up to the unheard of price of 2*s.* 6*d.* per bushel! It was of course only at the very big houses, such as those of Thomas of Lancaster, or my Lord of Derby at Latham, that things were carried on in such a grand way. We learn from the quaint writings of Harrison that it was often the custom to protect the guests from giving way to intemperance by returning the jug or cup to the servant as soon as ever the draught was quaffed; "and by this device much idle tippling is cut off, for if the full pot should continuallie stand at the elbow or near the trencher, divers would alwaies be drinking with it; whereas now they drink seldom and onlie when necessitie urgeth, and so avoid great drinking or often troubling of the servitors filling of their bols. Nevertheless, in noblemen's halls this order is not used, neither in any man's house commonlie under the degree of knight or esquire of great revenues. The gentlemen and merchants keepe muche about one rate, and each of them contenteth himself with foure, five, or six dishes, when they have small resort, or peradventure with one or two, or three at the most, when they have no strangers to accompanie them at their tables." The operatives of those days seem to have had very much of the same failings as so many have now—for "some of them do suffer their jawes to go before their clawes, and divers of them making good cheer do hinder themselves and other men."

Whether from ignorance of their virtues, or more probably from the insecurity of anything like personal property, kitchen gardens were held in small account in the middle ages, and vegetables and herbs were seldom or never seen either at the rich or poor man's

table—at all events between the reigns of Edward I. and Henry VII. About this time, however, they came more into use, and the importation of the potato in Queen Elizabeth's reign by Sir Walter Raleigh gave a great impetus to this kind of diet. It is said, by the way, that the very first crop of potatoes ever raised in England was grown at Formby, on the Lancashire coast, by a native of that village who sailed with Sir Walter. The working classes then did not get the same quality of white bread in which they delight now-a-days; for good wheaten bread indeed was only seen at the tables of the rich, those of lower degree having to put up with rye or barley bread, and often thinking themselves lucky to get that. The habit of eating barley bread has descended to the inhabitants of the north to this day, and it may be often seen in country places, and especially in the hilly districts. Oat bread is not uncommon in the somewhat wild region around Rochdale, between Lancashire and Yorkshire, where indeed its use was so universal that the inhabitants of that neighbourhood were quite proud of it. As lately as the commencement of the Peninsular War a regiment was raised in East Lancashire which called itself "the Haver cake lads," from this circumstance, carrying an oat cake at the end of the recruiting sergeant's sword as a badge of its nationality.

It was mentioned in the July number of this *Journal* to what an incredible length of time the feasts and banquets were spun out in the 14th and 15th centuries. This habit was considerably modified in the time of Elizabeth, when the practice of sitting long at meals grew into disuse, and two meals a day were thought sufficient. The usual hour of dinner in society then, not only in Lancashire, but all England, was about 11 in the forenoon, and of supper between 5 and 6 p.m. The merchants, however, dined at noon, while on the other hand the students at the universities had their dinners at 10 a.m., very nearly twelve hours in advance of the fashionables of the present day. Breakfast was usually at 8 a.m., and *was* breakfast, not slops of tea, coffee, or cocoa, with a little titbit to encourage the jaded appetite—but a good substantial meal of beefsteak and ale, or any fish, flesh, or fowl which was in season. Even the court supped at 6 p.m.; for it is related that when Bradford, the Lancashire martyr, sent to ask Queen Mary to interest herself in his behalf, the answer was sent back that his message should be delivered "past six of the clock," after the Queen had finished her supper.

Very interesting details have come down to us respecting the travelling accommodation of those days, when the principal, and

indeed in most places the only way of getting about was on horseback or foot. Holinshed, the antiquary, states that the inns had wonderfully improved in the time of Elizabeth; and he mentions those of Kendal, Lancaster, Preston, Wigan, and Warrington as some of the best houses of call in England, especially in the matter of clean sheets. "Each comer," says he, "is sure to lie in clean sheets wherein no man hath lodged since they come from the landresse. If the traveller have an horse, his bed doth cost him nothing; but if he go on foot, he is sure to pay a penie for the same; but whether he be horseman or foote, if his character be one appreciated, he may carrie the kaie with him, as of his own house, so long as he lodgeth there." Previous to this era of clean sheets, the traveller, whatever his rank, never got anything but the straw pallets and wooden bolsters which were universal even in the best houses.

The question whether fowls or ducks are the better investment for the production of eggs has to some extent been settled experimentally. It was found that on choosing three chickens and three ducks hatched in February of the same year, the ducks took the lead, laying 225 eggs in autumn while the fowls laid none. All were liberally fed with various kinds of food. The ducks recommenced the next February, and laid without interruption until August. They showed no inclination to breed, became thin at first, but gained afterwards. The following table gives the details of the season:—

	Eggs laid by the Fowls.	By the Ducks.
January	26	none
February	37	24
March	39	63
April	41	68
May	39	82
June	33	72
July	32	70
August	10	13
Total	257	392

This is at the rate of 86 eggs per fowl and 131 per duck. 100 fowls' eggs weighed 12·1 lbs., and the shells, 1·44 lbs. 100 ducks' eggs weighed 11·8 lbs, and the shells, 1·54 lbs. The solid substance of the former was 26·01 per cent. and of the latter 28·98. The fat amounted to 11·27 per cent. in the fowls' and to 14·49 in the ducks' eggs. The ducks thus appear to be the winners in the competition.

The *Boston Journal of Chemistry* notices the arrival from California of a monstrous pea, measuring 13½ inches round and 17½ inches lengthways. It weighed three pounds when gathered. The variety is believed to be that known as the "Vicar of Wakefield."

THE NUTRITIVE VALUE OF BREAD.

Bread is of such importance as a food among civilized nations that a survey of the results obtained by Bischoff* on its nutritive powers must be of general interest.

In 1860 experiments were made by subjecting dogs to a bread diet. It was found that this was insufficient, since a dog that was allowed to eat as much as it liked wasted away rapidly, and cats treated in the same way showed all the symptoms of actual starvation. The dog was supposed not to be able to digest as much bread as would suffice to replace the amount removed by change of tissue and matter. Bischoff put the following questions to himself:—

1.—Will experiments on other animals show similar results?

2.—What is the probable cause of so little nutriment being extracted from the bread in the intestines?

3.—What simple additions would tend to increase the nutritive value of bread?

In his subsequent experiments he chose a dog of about one year old, weighing 30 kilos., which was fed on stale rye bread with as nearly as possible a proportionate allowance of water. The crust was removed so that only the crumb was given. "At first," says Bischoff, "I placed 1,000 grammes of bread before him, of which he only took about 800 during six or eight hours. I consequently gave him that amount regularly, although he would sometimes only take it by being coaxed or even forced." The experiments were continued for 132 days. The diet was periodically changed from one of bread alone to a mixed one. Thus the dog went through the following stages:—At first he received 800 grammes of bread, and afterwards the same amount with 20 gr. of extract of meat. He then received successively 800 gr. of bread by itself; the same quantity of bread with 100 gr. of meat; bread alone; 800 gr. of bread with 5 gr. of meat extract; the same with 5 gr. of meat extract and 3 gr. of salt; 800 gr. of bread by itself; and lastly 302 gr. of flesh with 354 gr. of starch, corresponding to the nitrogen contained in 800 gr. of bread, and to the starch contained in 675 gr. of bread. Daily observations on the amount of nitrogen taken in and given out by

* "Zeitschrift für Biologie."

the system showed the following results:—During the first stage (that of bread solely) the dog lost 42·1 gr. of nitrogen (corresponding to 1,240 gr. of flesh) more than it acquired. It lost weight daily at the rate of 99 gr.; in the second stage it still lost 16·6 gr. of nitrogen (corresponding to 487 gr. of flesh); and it lost weight at 39 gr. per day. The third stage showed another decrease, for it parted with 16·7 gr. of nitrogen (492 gr. of flesh) and still lost 8 gr. in weight daily. During the following stage the matter was entirely reversed. Instead of losing, the animal made up 197 gr. of flesh in fifteen days, increasing 61 gr. per diem. Again the subsequent stage resulted in waste, though not so much as before. The allowance of a little meat extract and salt actually increased the wasting process. The decreasing ratio of this loss of weight in protracted experiments tends to show that the animal might gradually be brought to conform to a bread diet. But in reality this does not seem feasible. The movements of the animal became more and more weak and languid. It had difficulty in leaping out of its kennel, and on the whole it may be asserted that rye bread alone is not sufficient to keep a dog alive. The last stage is of particular interest. It shows that the same quantity of nitrogenous and about the same of non-nitrogenous matter given in a different form have an entirely different effect. During this stage the dog recovered rapidly, became more animated, and jumped about vigorously. Yet the amount of nutritive matter taken was the same in the first as in the last stage, but in the shape of bread in the one and in the shape of meat and starch in the other. 302 grains of meat contain the same amount of nitrogen as 800 gr. of bread, and 354 gr. of starch are equal to about the same quantity, namely 675 gr. of bread.

Bischoff refers this peculiarity to the shortness of the dog's intestines, which renders it unfit for vegetable diets. Moreover the bread itself prevents at least 13 per cent. of nitrogen from entering the blood. It is therefore an insufficient food and incapable of answering the demands of the body unless used in combination with nitrogenous substances such as cheese or meat. The cause of the *quasi* indigestion induced by the bread is found to be in the intestines, where a sour fermentation is set up by which the substances are carried away. Hence it is that the albumen in the bread cannot take the part of meat. It would be of the utmost importance, especially with regard to our own food, to discover a means whereby such fermentation might be prevented, so as to afford the food a sufficient time to be thoroughly digested.

E. H. Fournier.

FOOD SUPPLY OF THE ARABS OF MESOPOTAMIA.

During the course of a short sojourn in Mesopotamia, some years ago, I was fortunate enough to see something of the inner life and domestic economy of the Arabs of that province. The most powerful tribe of Bedouins in the interesting Pashalic of which Baghdad is the capital, is that known as the Montafik or Montafige, which, it is said, can bring into the field 70,000 warriors.

The hospitality of the Bedouin is proverbial, and its practice is indeed inculcated as one of the tenets of the religion promulgated in the Koran. No circumstances, however urgent or embarrassing, can be put forward as extenuating the neglect to exercise that social virtue. Having as a stranger on more than one occasion demanded the hospitality of a Bedouin family, it has always been conceded to me as a right, though in many instances the practice of this virtue proceeds from vanity and a desire of distinguishing themselves among their equals in the tribe; yet, where all foreigners are much disliked, as among these children of the desert, due credit should be given to them for the warmth, ostentatious if you will, with which it is awarded to the stranger.

One of the chief occasions for rejoicings and the accompanying feast is the circumcision of the males of a suitable age, and it is generally arranged by those who have families in a camp that all the young boys should undergo the rite on the same day. Every man then kills at least one sheep in honour of his son, sometimes three or four, and all the members of the tribe feast together during the whole day; on these occasions all strangers are admitted and welcomed. We will describe the nature of the fare with which a traveller would be regaled, and though the materials of the feast may not be considered of a very tempting or varied character to any reader accustomed to the *menu* of Western capitals, to hungry guests like ourselves it was very acceptable, and as for condiments, we thought of the ancient but homely adage, "Hunger needs no sauce," and recognised its truthfulness.

Throughout the desert there is a great sameness in the Bedouin dishes, for the ingredients everywhere chiefly consist of flour and butter. In each province, however, different names are given to the same dish, and though the Bedouin of Mesopotamia partakes of

the same dish as his brother of the Hedjaz he knows it by a different name. The principal Bedouin dishes are the following:—Unleavened paste of flour and water, baked in ashes of camel's dung, and mixed up afterwards with a little butter, and sometimes with milk. When the whole is thoroughly kneaded, it is served up in a bowl of wood or leather.

Burgoul is wheat, boiled with some leaven, and then dried in the sun. In this state it may be preserved for a year, and, when boiled with butter or oil, is a common dish with those Arabs whose habitat adjoins countries where grain is largely grown, as Syria, Mesopotamia, and the cultivated valleys of Hedjaz and Yemen. Another common dish in the interior of the desert is coarsely-ground boiled wheat, over which butter is poured, sometimes with the addition of milk. It is only when circumstances compel that the Arabs content themselves with a diet of milk and meat. Thus those who dwell on that portion of the eastern coast of the Red Sea between Yembo and the Gulf of Akaba, use but little wheaten bread, as they are far distant from those cultivated districts in which the inhabitants have a greater variety in their diet.

Ayesh is a dish composed of flour and sour camel's milk, made into paste and boiled. The camel's milk soon becomes sour after it is put into a goatskin. Simple rice or flour boiled with sweet camel's milk is much consumed, and a favourite article of diet is bread, butter, and dates, blended together into a paste. Bread is of two sorts, both unleavened, one of which is baked in round cakes upon a plate of iron, and the other description is made by spreading out in a circle a great number of small stones, over which a brisk fire is kindled; when the stones are sufficiently heated, the fire is removed, and the paste spread over the hot stones, and immediately covered with glowing ashes, and left until thoroughly baked. This bread is used only at breakfast. Butter is made only from goat's or sheep's milk, for the milk of the camel is never used either for butter or cheese.

The sheep and goats are milked every morning before daybreak by the women, and that portion intended to be made into butter is first put into the *keder* or vessel over a slow fire, and a little sour milk or a small piece of the dried entrails of a young lamb thrown in with it. The milk then separates and is put into a goatskin, which is tied to one of the tent-poles, and for one or two hours constantly moved backwards and forwards; the buttery substance then coagulates, the water is squeezed out, and the butter put into the skin. If after two days they have collected a certain quantity of butter, they again place it over the fire, throw a handful of

burgoul (described above) into it, and leave it to boil, taking care to skim it. After having boiled for some time, the *burgoul* precipitates all the foreign substances, and the butter remains quite clear at the top of the *keder*. The butter-milk is once more strained through a bag of camel's hair, and whatever remains in it of a butter-like substance is left to dry in the sun, and then forms an article of food. The *burgoul*, cleared of the butter with which it was boiled, is eaten by children. Having taken off the butter, the butter-milk is again beaten till it coagulates, and next dried to a hard substance, and ground by the women, when it becomes a staple article of consumption, and is eaten mixed with butter.

Burckhardt, in his valuable and interesting work, "Notes on the Bedouins and Wahabys," speaks of a favourite dish of the Arabs, which they call *Kemmaye* or *Kemma*. It is a kind of truffle growing in the desert, without any appearance of either roots or seeds. There are three species of it, the red, black, and white, and in size and shape the kemma much resembles the true truffle. If the rain has been abundant during winter, the kemma is found in the month of March. "They lie," says Burckhardt, "about four inches under ground; the place where they grow is known by a little rising of the ground over them. If the fruit is left to attain full maturity, it rises above the earth to about half its volume. The children and servants dig it out with short sticks. They are sometimes so numerous on the plain that the camels stumble over them. Each family then gathers four or five camel loads; and while their stock lasts, they live exclusively upon this edible. The kemmas are boiled in water or milk till they form a paste, over which melted butter is poured; they are sometimes roasted and eaten with melted butter. It is said that they produce costiveness. If they have been abundant, they are dried in the sun, and afterwards dressed for use like fresh ones. Great quantities are consumed by the people of Damascus, and the peasants of Eastern Syria. In general they are worth at Damascus about a halfpenny per pound. They are brought to Damascus from the district near Tel Zeykal. The great plain between Damascus and Baghdad and Bussorah is full of kemma."

Arabs never indulge in luxuries except at festivals or on the arrival of a stranger. For a common guest bread is baked and served up with the boiled paste of flour and camels' milk, called *Ayesh*, already described. If the stranger is of some consideration, coffee is prepared for him and bread with melted butter. For a man of rank a kid or lamb is killed, and after being boiled with *burgoul* and camels' milk is served up in a large wooden dish,

round the edge of which the meat is placed. A wooden bowl, containing the melted grease of the animal, is pressed down in the midst of the *burgoul*, and every morsel is dipped into the grease before it is swallowed. Sometimes a lamb is roasted or baked in the earth, a hole being made for that purpose, and heated and covered with stones. If a camel should be slaughtered (which rarely happens) it is cut into large pieces; portions of the meat are boiled, and the grease mixed with *burgoul;* then the remainder is roasted, and, like the boiled pieces, placed upon the dish of *burgoul*. This dish is esteemed a great delicacy. The grease of the camel is kept in goatskins, and used like butter. On their journeys the Bedouins eat, with locusts which are carried strung together, unleavened bread baked in the ashes and mixed with butter, though the chief article of diet of the Arabs about Bussorah is the delicious date which grows so plentifully on the banks of the Shatt-el-Arab and its tributary streams.

In the Hedjaz, where large quantities of Indian rice are imported, the usual dish of the Arabs is that article of food, mixed with lentils and without any bread, which is dear in those parts. Some Bedouin tribes have a custom of boiling certain herbs in butter, which is then poured off into skins containing their provisions. This butter thus becomes strongly impregnated with the odour of these herbs, and its flavour is considered to be greatly improved thereby.

The Bedouins who inhabit those provinces of Arabia bordering the Red Sea and the Persian Gulf, as Omen on the coast of the latter, and Hedjaz of the former, use butter to excess. A traveller relates that those who can afford the luxury, swallow every morning before breakfast a large cupful. All their food also swims in butter. The digestions of the Bedouins are strengthened by the continual exercise which they take, and by their habit of living so much in the open air. An Arab will live and thrive for months together on the smallest allowance of food, so little, indeed, that a European would think that he could scarcely support life upon it, and then, if an opportunity should occur, he will gorge himself with half a lamb at a sitting, and that without any injury to his health.

Arabs often eat raw sheep's liver or kidney, seasoned only with salt; some tribes of Bedouins consume other parts of the sheep in an uncooked state; others eat gazelles and horseflesh, but this latter is never an article of diet of the northern Bedouins.

The Bedouins cannot be credited by their greatest admirers with any cleanliness in their manner of eating. After following the salutary custom of washing their hands before dinner, they thrust

the whole hand into the dish placed before them, shape the *burgoul* into balls as large as a hen's egg, and thus swallow it. The ablution is performed before dinner, but it is seldom practised after meals, your Arab host contenting himself with licking the grease off his fingers, and rubbing his hand upon the leather scabbard of his sword ; should a towel be required, a corner end of the tent covering called *roffe* is used. Breakfast is generally served about 10 o'clock, and dinner or supper, the chief meal, at sunset.

Fish is not much in request, nor is it eaten from choice even when it happens to be abundant, which is often the case near the banks of the Euphrates and Tigris.* The favourite beverage is sour milk, called *leben*, the preparation of which is understood everywhere among the Arabs. Cheese is universally eaten except, according to Burckhardt, among some tribes about Sinai ; throughout Mesopotamia it is of very good quality and, especially in the markets of Baghdad, is scarcely inferior to our Cheddar.

But the greater part of the Arab cheese is of a very indifferent quality, and would be considered by us unfit for human food. The women do not eat with the men, but have their meals in an apartment which is separated from the portion set aside for the lords of creation by a white woollen carpet drawn across the tent, and fastened to the three middle posts. The ground of the men's living room is generally covered with a good Persian or Baghdad carpet, the wheat-sacks and camel bags being piled up round the middle post, and the camels' pack-saddles upon which the *sheïkh* or guests recline being placed further back. The women's apartment is made the receptacle for all the rubbish of the tent, such as cooking utensils, the butter and water skins, etc. The fare of the gentle sex is of an inferior quality to that devoured by their masters ; they seldom have the good fortune to taste any meat except the head, feet and liver of the lambs, and of course are not allowed to participate in the good things so freely lavished on the stranger within their gates.

C. R. Low.

At a recent meeting of the Society of Arts, Sir A. Brady called attention to the very excellent manner in which the Victoria Meat Preserving Company, Limited, sent over their corned and tinned meats to their London agent in Lawrence Pountney-lane. We willingly add our testimony in corroboration of this, and think that the best proof of their goodness lies in the fact that a friend's servants ate a couple of joints of beef and mutton without a single protest.

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* Chesney's Expedition for the Survey of the Euphrates and the Tigris.

THE FOOD PRODUCERS OF GREAT BRITAIN.

The Census Returns of the United Kingdom tell strange tales about the changes in the food-producing population of Great Britain. There was a time when the importation of foreign corn into this country was to a large extent forbidden by law; but as soon as a corn-trade with foreign countries became possible, foreign corn began to pour in, and English capital to pour out to pay for the same. The rate of increase of the new trade may be seen in a return ordered to be printed by the House of Commons on the 14th June, 1864, which return shows the total quantity of all kinds of grain, corn, flour, and meal imported annually into the United Kingdom for the preceding twenty-two years. The figures show that the foreign supply about doubles itself in every ten years, and that in 1860-64 the money sent out to pay for it averaged about 30,000,000*l.* a year.

The withdrawal of 30,000,000*l.* a year from our food-producing population must have had very considerable influence. It raises the question, "Do we grow at home more meat to compensate for the trade lost to our agricultural districts in corn?"

From the returns issued yearly by the Houses of Parliament, it is shown that between the years 1848 and 1856, the average annual number of "oxen, bulls, cows, and calves," imported into the United Kingdom, was 86,991; whereas between 1857 and 1864 inclusive, the average was 119,977. The total average yearly number of sheep and lambs imported between 1848 and 1855 inclusive, was 170,593; whereas between 1856 and 1864 inclusive, it was 290,773. The total value of bacon and hams imported annually between 1854 and 1859 was 8,361,970*l.*; whereas between 1860 and 1864 it was 11,982,232*l.* The population of the United Kingdom increased 61 per cent. in the fifty years ending 1861, and if it be assumed to be still increasing at the same rate (which it is not), it follows that the supply of foreign meat, instead of ceasing, since the growth of corn crops in Britain has been diminishing, has actually increased about four times faster than the mouths over here which are to eat it.

As so many millions of pounds are now being sent abroad annually, instead of being spent in this country, the effects upon the agricultural population ought to be visible in the Census Returns.

That Ireland is in course of depopulation everybody knows, for it once had 8,000,000 inhabitants, but now has only about 5,000,000. It is not so generally known that the agricultural districts of England and Wales have long been in course of depopulation; but the following figures, from the last Census Returns, reveal a painful story:—

Number of Male and Female Adults engaged in Agriculture in England and Wales, 1851 *and* 1861.

Census Divisions.	Number of persons aged 20 and upwards.		Difference between 1851 and 1861.	
	1851.	1861.	More.	Less.
The Metropolis	15,837	15,687	—	150
South Eastern Counties	184,601	178,146	—	6,455
South Midland Counties	167,627	163,547	—	4,080
Eastern Counties	160,249	155,818	—	4,431
South Western Counties	227,554	207,173	—	20,381
West Midland Counties	179,363	179,800	437	—
North Midland Counties	142,389	144,710	2,321	—
North Western Counties	112,184	119,070	6,886	—
Yorkshire	137,681	136,909	—	772
Northern Counties	83,882	78,942	—	4,980
Welsh Counties	164,713	151,488	—	13,225
	1,576,080	1,531,290	9,644	54,474

For the last twenty or thirty years, then, a vast tide of destitute human beings has been pouring out of the agricultural districts of England, Wales, and Ireland. This great living stream splits itself into two parts. One division pours into our great cities, seeking work, but not finding it to the extent required, since all our large towns have been swarming with paupers for the last thirty years and more, as shown by the Government returns. The other part of the stream pours into foreign countries, chiefly America. Official returns show that the great bulk of natives of the United Kingdom, who land at New York, are farmers and agricultural labourers. That the agricultural labourers remaining in our rural districts are not in flourishing circumstances, is clear from the condition of Ireland, and the constant discussions in the newspapers about plans for ameliorating the condition of the English farm labourers, for the abolition of the "gang" system, and for the improvement or abolition of many of the laws relating to the tenure of land.

What is the effect upon our towns of the steady influx of this great tide of human beings? It causes the life of the nation to concentrate itself more and more in the streets and alleys of cities, in homes where the air is less pure, and in neighbourhoods where vices flourish to a much greater extent than in rural districts. The result of this is that the race deteriorates, and that English men and

women become more sickly and shorter in stature. A vast number of facts and statistics about this deterioration will be found in a paper by Mr. John Beddoe, B.A., M.D., on "The Stature and Bulk of Man in the British Isles," published in Vol. III. of "Memoirs of the Anthropological Society." How can this hemorrhage from the agricultural districts be stopped? If more security could be given to farmers for the expenditure upon the soil of capital in money and labour, it would be one step in the right direction. England differs from many other countries in the fact that the men who cultivate the ground are not the men who own it, so that they often have little inducement to improve it to the utmost, since they know that they are liable to have the fruits of their industry taken away by a rise in rent. I would suggest the abolition of the laws which favour entails and primogeniture, and the introduction of a simple, cheap, and expeditious method of buying and selling land, as in other countries, so that a small piece of land can change hands nearly as rapidly as a pig or sheep, without the intervention of legal delays or lawyers' expenses. This will break up our present artificial and unnatural system of land tenure, and when our rural population find that they are no longer divorced so completely from the soil which they cultivate, they will have inducements to remain where they are, rather than to gravitate towards our great cities.

In Mr. John Stuart Mill's "Political Economy," there is much valuable evidence as to the condition of those Continental agricultural districts where there is no artificial system of land tenure. The effects upon agricultural towns of the concentration of the landed property in few hands, of the property generally diffused in rural districts, and of the migration of agricultural labourers to the manufacturing districts, is plainly visible to observers.

An impoverished and sparse agricultural population can buy none but the poorest and commonest goods from the manufacturing districts, nor can a few great landowners, however rich, have requirements which will much increase the demand for such goods, as for instance, woollen cloth. Agricultural districts dotted with farms, whose owners receive their own rents, and who labour night and day at the improvement of the soil, because of the security of their tenure, would be able to purchase goods to a much larger extent from the manufacturing districts, than our present agricultural population can possibly do. The adoption of this plan, and of others which space will not permit me to detail on this occasion, would, I think, tend to bring about a greatly needed change for the better.

William H. Harrison.

THE REVICTUALLING OF PARIS.

The capital of France has gone through one of the hardest trials to which a great town was ever subjected, and has only just escaped a catastrophe, the very possibility of which makes one shudder, even now that the danger is passed. The government, urged by the sentiment of honour, buoyed up by hopes that were born of insufficient, possibly of incorrect information of aid from without, and lacking, as all governments do, the necessary commercial and common business-like tact, placed two millions of souls in the greatest danger of starvation, or at any rate of intense suffering, from the insufficiency and bad quality of the food. The slightest accident at the last moment might have brought the catastrophe upon us, and with it almost certainly *émeute*, revolution, bloodshed.

For many weeks the great mass of the population had not tasted good fresh meat; an ounce of tough horseflesh per head per day can scarcely be called meat. The supply of breadstuffs was much nearer exhaustion than was asserted, and the bread, doled out in quantities insufficient alone to sustain life, was not only disagreeable, but almost absolutely indigestible, except by young, active, hardy men. The mortality had risen from 1,500 to more than 5,000 per week, and the position of the city was no longer to be maintained.

When future generations read the history of the siege of Paris, what will impress them most—the courage, the sense of honour, of glory, on the one side, or, on the other, the infamy of ambition, and the deplorable folly of nations in allowing themselves thus to be made the victims or the instruments of so much brutality and suffering?

The victualling of a great city is an operation of which few can have a clear conception. It is now nearly three weeks since the armistice was signed; nearly the whole force of the population, with the aid of great assistance from without, have been devoted to the subject; enormous supplies have been brought in, but business is not yet reinstated on its old basis, and we are still paying double the ordinary prices for beef and mutton, eggs, butter, cheese, and many other articles, while some of these, and others, are still scarce, and present no choice.

When the armistice was signed and the gates of Paris opened, provisions were sought in the environs with feverish excitement. A fine loaf of white bread in the hands of a fortunate being at a small station on our circular line drew an admiring crowd, and a boy carrying half a sheep was followed by troops along the street. At the various bridges and barriers of the Prussian lines, regular, or rather very irregular, markets were established; but these gave rise to deplorable scenes, and had to be stopped. Considerable quantities of butter, cheese, poultry, and game were brought in from the country around, and for a few days these articles fetched enormous prices, and shops that generally disdain anything but the choicest dainties, made a grand show of a whole sheep, or even a portion of one, a joint or two of pork, or a mound of salt butter. But the scene that occurred on the arrival of the first supply of fish from the seaside surpassed all description. The fish was sold, as usual, by auction, as at Billingsgate; but not, as usual, in bulk, but in detail. From four in the morning, the wholesale fish market was packed by a dense crowd, although the sale did not begin till the usual hour of seven. The following are the average prices, obtained from an official source:—turbot, weighing two to five pounds, 20 to 45frs.; skate, about 2frs. 50c. per pound; whiting, 1 and 2frs. each; soles, from 3 to 18frs.; very small red mullet, from 80c. to 1fr. 25c.; plaice, 2frs. 50c. per pound; mackerel, 5, 6, and 7frs. each; smelts, 15frs. the dozen; and red herrings, of which there was a good supply, sold uniformly for 25c. each. In the afternoon of the same day, another train arrived unexpectedly with fish; it brought a large quantity, but the purchasers were so numerous and so eager that the prices remained unabated. Other departments of the great halles or central market were as animated on this first day of the revictualling. Vegetables were in great demand; carrots sold at 4, 5, and 6frs. the bunch; potatoes at 90c. to 1fr. 40c. per pound; onions, still rare, 4 and 5frs. the litre. Butter began to be within the reach of ordinary purses, and was quoted at as low a rate as 4frs. 50c. per pound. Eggs were sold at 4frs. per dozen, wholesale; but, in the evening they were not to be found at the shops at less than 5 or 6frs.

Visiting the market two days later, in the afternoon, I found it crowded with a very unruly mass of people. No fish train had come in, and disappointment seemed likely to turn into violence; the saleswomen were hiding away their best goods, and the aspect of affairs was not at all encouraging; however, beyond a few rows, no harm was done.

When the first convoys of flour and live cattle arrived, the whole population turned out to see the show; and the first drove of sheep that I saw, a very small one, preceded by a dozen "lean kine," caused veritable excitement. "They accused us of worshipping the golden calf, the other day," said a philosophic observer; "it is the live animal we adore now."

Every day has produced a marked increase in the supply, and during the last two days prices have fallen considerably; meat is now almost at ordinary prices. This has been produced partly by the fact that the government, although leaving the butchers free, still keeps open the municipal places, where small quantities of beef and mutton are yet to be had at the old ration prices.

The amount of labour to which the revictualling of Paris has given rise is almost inconceivable. The official returns show almost daily the quantities brought in—thus:—On the 14th instant, the arrivals were 1,284 head of cattle, 689 sheep, 51 cows, 400 pigs, 944 tons of grain, 1,142 tons of flour, quantities of biscuit, 47 tons of preserved beef, 78 tons of salt fish, 390 tons of pork and bacon, 1½ tons of fresh fish, 17½ tons of salt cod and herrings, 29 tons of cheese, 4½ tons of butter, 168½ tons of vegetables, 491 tons of fodder, 372 tons of coal, and 121 tons of coke. The total, from the 3rd to the 14th instant, of the leading items is given as follows:—Cattle: bullocks, 10,544; cows, 885; sheep, 10,613; pigs, 1,382; corn, 13,578 tons; flour, 29,302 tons. The Northern Railway alone, during the eleven days, ran 107 trains, composed in all of 3,948 vans, and bringing in 8,658 head of cattle, and 26,000 tons of provisions and fuel.

With all this immense supply, although we can now get butter at 3 or 4frs. a pound, instead of 20 or 30frs.; eggs at three-pence each, instead of 2frs. or more; and cheese at about half-a-crown a pound; the supply is yet very unequal, and some things are not easy to obtain at all.

Bread, I may mention, has just been taxed at 50c. the kilogramme, instead of 47c., as before.

Paris, Feb. 16. G. W. Yapp.

Dr. E. Fellèter has found that the alkaloid capsicine contained in the Spanish pepper (the fruit of *capsicum annuum*) is somewhat similar to the coniine, which forms the poisonous principle of hemlock. On heating the powder, or an alcoholic extract thereof, the characteristic smell of coniine is at once discovered. For the sake of those devoted to mixed pickles, it is to be hoped that further analysis will establish a difference between the coniine and the capsicum.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

POOR MAN'S PLATEFUL.

Buy half a sheep's liver; cut it into thin slices; place it, with a bit of butter or dripping, in the fryingpan over a moderate fire, with two onions and two shalots sliced up fine. After partly cooking these, add two slices of bacon cut into finger strips, and when cooked sufficiently take all out, and place on a plate before the fire. To make the gravy and sauce to serve with the liver, first pour off the grease, and then put into the fryingpan about a wineglass of boiling water; stir it about with a fork, and place over the fire. Have ready to put into this gravy the following preparation: With a large wineglass full of cold water, mix intimately a teaspoonful of flour, add pepper and salt, and a teaspoonful of dried sweet herbs (basil, lemon thyme, common thyme and sweet marjoram), with a sprig of chopped parsley. Add this to the gravy in the fryingpan, and when it boils up, pour it over the liver, and serve hot. Calves' liver would be preferable, but cooked this way the sheep's liver makes a savoury and economical dish, and if not all consumed, can be "hotted" up again as good as ever. Cost, *7d.*, and enough for two.

BAKED HADDOCK.

Scale and clean the fish, without cutting it open much; put in a nice delicate forcemeat, and sew up the slit. Brush it over with egg, sprinkle over some bread crumbs, and baste frequently with butter. Garnish with parsley and cut lemon, and serve with a nice brown gravy, plain melted butter, or anchovy sauce. The egg and bread crumbs can be omitted, and pieces of butter placed over the fish. The time required for baking a large haddock, will be about three-quarters of an hour; moderate size, a quarter of an hour.

A CHEAP PLAIN CAKE.

Take 2lbs. flour, ½lb. fresh butter, 1lb. moist sugar, 1 teaspoonful of salt, two small packets of Borwick's baking powder, and mix them together thoroughly. Shred ¼lb. (or rather more) of best candied peel (mixed) very fine; intermix with the ingredients first-named, stirring it with a spoon, so as to avoid breaking the fine shreds of peel. Make the whole into a stiff batter with milk or water, and place without delay in a well-greased tin; bake in a brisk oven for about two hours. When lightly made and carefully baked, the result will be a cheap plain cake possessing a peculiarly delicate flavour.

NOTES OF THE MONTH.

Our hopes that a Government measure with reference to the Adulteration of Food and Drink would have been introduced this session, as partly promised by the Home Secretary, have not been fulfilled; for, in answer to Lord Eustace Cecil, Mr. Bruce stated that it was not his intention to legislate on the subject this year, whereupon Mr. Muntz, M.P., has given notice that he will bring in a Bill. While being thankful for every mercy, we are still of opinion that the subject is much too important to be delegated to a private member, and ought emphatically to proceed from the Government.

At the Victoria Discussion Society, on Feb. 14th, after the reading of a paper by Mr. Phillips Bevan, on the "Necessity of Education in Domestic Economy," a proposal was issued by Miss Faithfull to establish a Training Institute for Servants, in which cookery in all its branches and housework of every description will be practically taught. But as experiments of this kind cannot be carried on without a subject, it is intended that the scheme should embrace a suite of apartments for ladies, drawing, parcel, and reading rooms, and a public restaurant, at which the prices of a first class *ménage* shall be 25 per cent. less than at ordinary establishments. The whole arrangement proposed is so excellent, and the want of some such institution so urgent, that we are not surprised to hear that many of the leading members of society have given in their adhesion.

Mr. Andrew Murray has contributed to the *Field* some interesting information on Russian honey and the different kinds of plants affected by the bees. Eight samples have been forwarded to the South Kensington Museum by M. de Solsky, of the Agronomic Museum of St. Petersburg, each honey being produced by bees feeding on some special plant. That from the herbs of the steppes of Central Russia had by far the best flavour; next to this come the mignonette, and the lime tree; while that from the buckwheat was the worst.

The city of Dublin has taken the initiative in certain sanitary matters with a vigour which we earnestly trust may be imitated by all other towns. A raid has been very properly made on the confectionery and sweetstuff makers, and the poisonous wares found therein submitted to Dr. Cameron for analysis. The result was even worse than those detailed in the *Food Journal* from experiments on London sweets. Chromate of lead, cochineal, vermilion (or mercuric sulphide), were the principal poisons in vogue, the first named in very large quantities. Here is the autopsy of a Dublin confectioner's baby:—the cradle was made of plaster of Paris and sugar; the body of the baby of sugar and rice starch; its eyes were Prussian blue; its cheeks of cochineal, and its clothes coloured with chromate of lead. This one artificial infant had poison enough about it to have killed at least two live ones; and Heaven knows how many children have been sent to their last account by these manufacturers, not only in Dublin, but elsewhere. Ten of them were prosecuted and fined; and the highest credit is due to the Dublin authorities for carrying out with such vigour a law which in this country is almost universally a dead letter.

From the Annual Report of the Borough of Salford Health Committee, we learn that between Oct. 1st, 1869, and Sept, 30th, 1870, 9,882 lbs. of condemned provisions were seized, consisting of 4,817 lbs. of beef, 3,455 lbs. of mutton, 488 lbs. of lamb, 302 lbs. of veal, 392 lbs. of fish, and 428 lbs. of pork. A sentence in the next page of the Report is not as it should be. "No public analyst having been appointed by the Council, the committee have not felt it desirable to take any official action under the above Act." We trust that the day is not far distant when such an announcement will be impossible.

The researches of Dr. Spencer Cobbold on the entozoa that arise from sewage irrigation are calculated to throw us into still deeper perplexity as to the course which we should adopt in dealing with the sewage question. At the present stage of that experiment, irrigation seems to be the most profitable and the most practicable; but a new danger threatens us from this question, viz., the introduction into the human system of countless parasites and entozoa, through the medium of cattle fed upon sewage irrigation grass. The worst of it is that cattle which thus act as "bearers" of these abominable interlopers seldom show signs of the disease in themselves, as they appear to have the capability of resisting the effects of the presence of the parasites, except when the sufferers are young, as in the case of calves. Again, so little outward sign of disease does the meat show, that butchers are perfectly unconscious of it; but Dr. Cobbold has microscopically demonstrated the presence of thousands of entozoa in pork which to the eye appeared perfectly healthy. It is his deliberate opinion that there are now in this country thousands of cattle which are thoroughly measled, and which cannot be said to be safe as food for man. The subject is so new, that we are at present ignorant of the effects or of the amount of damage committed by parasites; but it is evident that the subject is one worthy of the deepest and most careful study.

Among the scientific items of the month bearing upon the food and sanitary questions, have been a paper read at the Society of Arts by Mr. B. Jones, on his peculiar process of meat preserving, and a trial of the Tapioca Bouillon Company's Portable soup.

A curious preparation of milk, half medical and half dietetic, has been introduced into this country from Germany under the name of *Koumiss*, which in Tartary, its native country, is a wine made by fermenting mare's milk and agitating it during the process. But as mare's milk is obviously impossible to obtain here, the same treatment is given to cow's milk; the result being, according to the *Medical Times*, a mixture of alcohol, carbonic acid, lactic acid, and finely divided caseine and butter, with the residue of the sugar and salts of the milk. In taste it is something like a mixture of champagne and cream, being at the same time sour, brisk, and rich. As the Tartars who use this preparation largely are extraordinarily athletic, and never know what consumption means, it is to be presumed that Koumiss is offered to the world as a precaution against phthisis.

BOOKS RECEIVED.

The Sewage Question.—Liverpool Polytechnic Society.

Annual Report for 1870 of the Dublin Public Health Committee.

Elementary or National Education. By J. Parkin, M.D.

THE
FOOD JOURNAL.

FOREIGN OFFICE REPORTS ON THE ADULTERATION OF FOOD, ETC.—PART VIII.

CONSUL-GENERAL PERRY reports that in VENICE the enactments of the Municipal Congregation of 1831, 1835, and 1855 apply not only to the adulteration of food, but also to the sale of food in a corrupt and unwholesome state from incipient or advanced putrefaction, which is punished by the forfeiture of the article condemned and a fine; in the case of the second offence, by arrest and the suspension of the owner's business.

A Municipal Enactment of 1862 establishes principles which must be adhered to by the makers of macaroni, vermicelli, liquors, and sweetmeats of every kind. The substances which compose the various tinctures and colourings of all these articles are carefully selected and described; and all goods, whether of foreign or native manufacture, are confiscated, if coloured by any others, and especially if deemed deleterious.

Stringent laws are in force, regulating the sale of wines, liquors, beer, vinegar, and distilled spirits, the vendors and makers being strictly forbidden to have in their possession drinks prepared, adulterated or damaged so as to render them injurious to health. With regard to new wine, it is necessary to observe the recent regulations, by which it is forbidden to sell such wine by retail before the 1st of November, those who come into possession of new wine before that time being obliged to notify the fact within twenty-four hours at the office of the Inspector of the Municipal Guard. The enactment of the 10th of April, 1855, prohibits the intermixture of olive oil with oils of a different kind. It is difficult to detect mixtures of cotton-seed oil; but complaint is seldom made, as the adulteration is not one that is injurious to health.

Bakers are forbidden to use sea-water as a substitute for salt, or even to keep sea-water, no matter for what purpose, in the place where bread is made. If any be found, it is considered that it is kept for being mixed with flour, and all the bread is at once confiscated and taken away. In order to identify each loaf of

adulterated bread wherever it may be found, whether in the original bakery or in other places where bread is sold, it is ordered that each loaf of bread shall have the mark of the maker stamped upon it, so that he may not be able to escape any penalties which he may have incurred.

At Brindisi, according to Consul Grant, the Italian Penal Code of 1859 is in force, which places the adulteration of food and drink under the head of *offences against public order*, which are punishable by fine and imprisonment, the former not to exceed fifty francs, and the latter one to five days. When food is adulterated with deleterious substances, it is seized and confiscated, and the breach of the law comes under the category of *crimes against public health*, punishable by from one month to two years' imprisonment. The Mayors are directed to prohibit the use of adulterated food and drink in their respective districts, though practically the enactments are not actively enforced, and consequently the evil of adulteration is tolerably widely spread.

Consul Dennis, writing from Palermo, reports that no legislative enactments respecting adulteration exist in Sicily, but there are municipal regulations which provide that no one be allowed to sell bread or pastes, such as macaroni, vermicelli, etc., without permission, which also has reference to the site of the shop. Bread is always obliged to be sold by weight, and each loaf is to be stamped with an indication of its quality. If it be wrongly stamped, with intention to deceive, the offender is liable to punishment. Bakers are bound to expose an assortment of their loaves of different sizes and qualities, with an announcement of the price of each, and if any other material of innocuous character be mixed with the flour, they must notify such admixture on cards hung up at their doors, stating the proportions of the several ingredients and the price of the article. The same rule applies to the sellers of oil and other comestibles which may be mixed with other things, not injurious to health. Any charge of adulteration must be verified by experts appointed by the municipal authorities. Offenders can be summoned before a magistrate by the inspectors appointed by the municipality, or at the complaint of the purchaser; the punishment, on substantiation, is by fine and imprisonment. Adulterated food is confiscated and destroyed, unless it is mixed with innocuous ingredients, when it is given to the poor. The regulations concerning bread are not rigidly enforced, and especially as regards the sale by weight, the stamping of the fancy bread, and the giving notice of any mixtures. There are no regulations in force about drinks, wines of inferior quality being often adulterated,

and sometimes with very unwholesome materials. The shops of all bakers, butchers, grocers and others who sell food, whether situated in the streets or in markets, are subject to inspection by officers appointed by the municipality, who visit them from time to time to test the weights and measures and the quality of the articles exposed for sale. They are bound to summon offenders at once before the magistrates, and to cause the immediate destruction of bad food. Sellers of bread and cereals are obliged always to keep on hand a supply equal to at least three days' ordinary demand; and butchers, if their shops are not adequately supplied for three consecutive days, are liable to a penalty. The butcher or baker who has obtained a license to open a shop cannot close it without giving a fortnight's notice to the municipal authorities. When these notices are so numerous as to suggest the possibility of a strike, the Syndic is bound to apprise the superior authorities, in order that steps may be taken to guard against the inconvenience. Snow is sold at prices fixed by the Municipality, and vendors of it must be prepared to meet the demands of their customers at any hour of the day or night.

Though it must be admitted that in many cases there is more or less laxity in the enforcement of these regulations, it is unquestionable that they tend very greatly to secure for Palermo a supply of good wholesome food. The heavy city dues, however, on all articles of consumption greatly enhance the cost, so that living in Palermo has become as expensive as in any other capital in Europe.

[TO BE CONTINUED.]

The Berlin *Klin. Wochenschrift* publishes a method of detecting the presence of Picrotoxin, the poisonous principle of the seeds of *Cocculus indicus* in adulterated beer. The analysis is based upon the fact that a solution of sugar of lead containing ammonia precipitates sugar, dextrin, gum, &c., but not picrotoxin, which, however, can be extracted by shaking the acidulous solution with ether. The beer under examination is first treated with ammonia until the smell of that substance strongly manifests itself. The precipitate is allowed to settle. To the liquid, as soon as it becomes clear again, an alcoholic solution of sugar of lead is added until another precipitate is formed, consisting of insoluble dextrin, sugar, &c. Sulphuretted hydrogen is added next, and the filtered liquid is boiled down. The acidulous residue is shaken up with ether and left to settle, when the ether containing the picrotoxin is drawn off. Picrotoxin is a strong tetanic poison producing vertigo, convulsions, and death. It dissolves in strong sulphuric acid, forming a saffron-coloured solution. With sulphuric acid and potassic bichromate it assumes a red-brown, and, on heating, a dark brown colour. Another test for picrotoxin is given in its action on cupric oxide, which it reduces from alkaline solutions, and when boiled with dilute acids takes up water, forming a substance which also reduces cupric oxide.

MR. MUNTZ'S NEW BILL.

On the evening of May 27th in the last year a debate took place in the House of Commons on the adulteration of our food and drink, during which the Home Secretary admitted the magnitude to which the evil had attained, and made a sort of half promise that legislation on the subject should follow during the session of 1871. But our hopes have been doomed to disappointment, for the new session had not been many days old ere Mr. Bruce intimated that, though the Licensing Bill would bear upon the adulteration of drink, no attempt would be made by the Government to legislate on that of food. It is difficult to account for this extraordinary apathy or timidity, or whatever may be the cause ; but the sad fact remains that people must not look for help to the authorities whose duty it is to provide it.

Mr. Muntz's Bill of 1870, to amend the Act of 1860, was withdrawn, and in its place we have the new Bill of 1871, which is more correctly a Bill for the encouragement of adulteration rather than its prevention, seeing that the provisions to meet the evil are getting beautifully less each time. This is the more to be regretted, as the publication in this *Journal* of the Foreign Office Reports on the legislation that prevails in other countries has given publicity to a vast deal of useful information, and many valuable hints might have been taken from them. But the seed has fallen on barren ground, and for all the good that our legislation is likely to receive from the study of these reports, they might never have been printed.

Clause I. of both Mr. Muntz's Bills (1870-71) provides that any person wilfully mixing any article of food or drink with injurious ingredients shall be liable to a penalty not exceeding 50*l.* for the first offence, and for the second, imprisonment with hard labour for a period not exceeding six months. The Act of 1860 provides that the penalty shall not exceed 5*l.*, and there is no imprisonment for a second offence. So far Mr. Muntz's Bill is an improvement, although we think that his 50*l.* penalty is just as much too large as the 5*l.* was too little, for it is absurd to suppose that any magistrate would inflict the full amount, and so it will practically be a dead letter. The offender will probably be severely admonished, warned of the fine which *might* be inflicted, and sentenced to one of 10*s.* or

20*s*. The fine should be one which a magistrate would not hesitate to inflict in its maximum degree, say 15*l*., which sum would be sufficiently large to leave a very disagreeable remembrance and have a deterrent effect.

Clause II. provides that any person who sells any adulterated articles shall be fined 20*l*., and on the second offence shall be publicly advertised at his own expense. In other words, that the more frequent the sin, the lighter the punishment, for there is a large class of tradesmen in London and our great cities who would prefer being advertised to paying a fine. We cannot see why the second offence should not be punished with imprisonment for fourteen days or a month, with the publicity as well. The first offence, when fully proved, should be punished with a fine of, say 5*l*., neither more nor less, and a prompt action of this kind would go a long way to nipping the mischief in the bud. If these tradesmen felt assured that they would return from the police-court minus 5*l*. and costs, or, if they made a second appearance, that they would not return at all for a month, we should see a wonderful difference.

Clause IV. says that the purchaser of any article of food, drink, or drugs in any district, county, city, or borough, *where there is a public analyst*, shall be entitled, on payment of a sum not exceeding 10*s*., to have any such article analysed. According to this, the public analyst is entirely a problematic individual who may exist or not, and it is a mere chance whether there is one to be found in any place when wanted. The Act of 1860, at all events, gave powers to appoint such analysts, and Mr. Muntz's Bill of last year improved upon this by saying that such analyst *shall* be appointed. But in his present Bill there is not a word about the analysts, and the appointment of such is not even *permissive* instead of being *compulsory*, as it should be. It is like playing Hamlet without the ghost, to frame an Adulteration Bill without the analyst, and it appears to us to be the most unaccountable omission in the whole Bill. The Act of 1860 provides that analysts shall be paid from 2*s*. 6*d*. to 10*s*. 6*d*., which we think a very fair way of putting it. Mr. Muntz's last Bill provided that Inspectors of Nuisances should have power to submit articles to be analysed, but there is not a word of this in the new Bill, nor does it even allow Justices the power to have things analysed.

We confess that this last effort has disappointed us in every way, and we think that, imperfect as the old Act is, we are far better off with it than we shall be with any new legislation framed in such a half-and-half sort of fashion.

INDIAN GROWN TEAS.

The subject of Indian-grown teas as a supply for the English market has long occupied the attention of the Indian Government, as calculated to encourage a growth of industry formerly but little attended to in that empire. Although comparatively little tea has hitherto reached this country from India, the supply has been sufficient to prove that Indian teas obtain a ready sale if prepared with care and well manufactured, as their aroma is highly approved of. For good green and black teas, therefore, the London market is unlimited. But for some years past large quantities of inferior teas have been forwarded from India to the home markets, planters having sacrificed quality to quantity. The result has been that much of this class of teas has been sold at unremunerative prices; but for this the planters have themselves to blame. By the opening of the railway lines to Bombay, and the Suez Canal, planters in Kumaon, Gurhwal, Dehra Dhoon, and the Kohistan of the Punjab will now be able to land in London the first crops of the season, which afford the best kinds of tea, by the end of June or middle of July annually, and thus forestall the China teas in the market by nearly a month. By activity and energy, the first crop of the season ought to be prepared and packed, and ready for transmission to the market by the 15th of May. It would thus be forwarded from Kumaon:—

From the interior of Kumaon to the plains of Huldwanee..	5 days.
From Huldwanee to Allygurh, by carts	9 ,,
From Allygurh to Bombay, railway goods train	10 ,,
Bombay to Liverpool per Suez Canal	32 ,,
	56 ,,

Similarly the Dehra Dhoon planters might send their tea to London in 45 days, and the Kanghra planters in 53 days. At present these would be sent *viâ* Bombay; but when the railway lines are completed in the Punjab, Kurrachee will be the shipping port for Punjab teas.

The time, therefore, required to land in London the teas of the Kohistan of the North-Western Provinces and the Punjab, is from 45 to 56 days, or from one and a half to two months. This would give the new Indian teas the command of the London market for some time prior to the arrival of the China teas. "And," says the

Superintendent of the Government Botanical Gardens in the North-Western Provinces, "in my humble opinion, the subject is well worthy of the attention of the tea cultivators in India, particularly of the North-Western Provinces, Punjab and Darjeeling, who ought to be up and doing, and by their activity and energy forestall the home market."

The following particulars are taken from a report by the above-mentioned officer, on the subject of Indian teas, and addressed to the Secretary of the Government, under date the 25th of April last:—

"The small quantity of tea yet prepared in Upper India may be compared to a drop in the ocean when it reaches the great London market, the emporium of the world. For general use, what are most required in the English market are the strong and highly aromatic teas prepared by the Shanghai process of manufacture, viz., the rolling of teas in pans. This mode of manufacture should, therefore, be adopted by the tea cultivators in India. Strong, and not delicate aroma is what is sought for by the masses in England; and to meet this, if they wish their tea to obtain a ready sale, the tea-planters should adopt pan-rolling, as by it all the juices which are pressed from the leaves are again absorbed by them, and thus go to strengthen the teas when prepared. In table-rolling on mats, on the other hand, the juices are lost. Although the teas as yet prepared in the North-Western Provinces and Punjab are minute in quantity, when the requirements of the London market are considered, those districts have in themselves means of bringing about a vast cultivation, provided capital and labour are available to carry it on. The waste and other lands fitted for tea cultivation have been estimated as follows:—

	Acres.
Kumaon	350,000
Gurhwal, East	180,000
Gurhwal, West	180,000
Dehra Dhoon	100,000
Jounsar Bawur	10,000
Kooloo and Simla District	35,000
Kangra Valley	30,000
Total	885,000

"Allowing the out-turn per acre at 100 lbs., which is a very small one, comparatively speaking, there might be supplied 88,500,000 lbs.; nor does this estimate include large tracts of country admirably fitted for tea cultivation in Jummoo, Cashmere, and protected Sikh States. From this latter source an additional 200,000 acres might be obtained, yielding 20,000,000 lbs. of tea;

thus bringing the amount up to 108,500,000 lbs., a quantity nearly equal to the whole importation of tea into Britain. The out-turn given above is, however, a small one, comparatively speaking, if high cultivation be adopted. Thus, in the Dehra Dhoon, in the late Government plantation, last year, the out-turn was 70,000 lbs. from 300 acres of planted land, or one and a half more than the above estimate. It would be a mistake to suppose that these waste lands will ever be brought into cultivation by native capitalists; this work, if it is to be done at all, must be done by British capital. The question now is, Is Indian tea cultivation a failure, or is it not? The fact is, that it has driven China tea out of the market of the North-Western Provinces and Punjab, has given employment to a large population who knew not where to find a livelihood, has kept able-bodied men in numbers at their homes, and thus enabled them to add to the census of the country by the propagation of their species; and when all these things are considered, there can only be one opinion, viz., that the cultivation has been a boon to the country at large; and every addition to the resources of a British dependency is so much indirect benefit to the mother country. All increase in the sources of supply tends to make commodities cheaper, and therefore more accessible to the poorer portion of the population; whilst reduced prices also tend to check adulteration. So that by thus multiplying the tea-producing districts of British India, a direct encouragement will be given to the use of 'the cup that cheers, but not inebriates.'"

F. C. Danvers.

An interesting report has just been presented by the Registrar General of Scotland, which contains some valuable remarks by Dr. Stark on the different habits and results of feeding practised on babies. The English cram their babies with spoon diet almost directly after they are born, while the Scotch give nothing but mother's milk till the child begins to cut its teeth. The statistics of infant mortality show that in England there were 23,198 deaths from convulsions out of 786,858 children under one year of age, or 1 in every 34; whereas in Scotland only 312 died from the same cause out of 115,514 children.

In corroboration of Dr. Cobbold's new and striking views about the dangers arising from irrigation sewage, a report has been received from Dr. Hewlett, of Bombay, stating that he had ordered 14 cows to be destroyed on account of their flesh being infected with the measle, or, more scientifically, a parasite called *cysticercus*, which unfortunately has a *penchant* for inhabiting that portion of the animal which produces our favourite rump steaks. Nearly all the cattle were in excellent condition, and showed no signs of disease. We trust that no time will be lost or pains spared by our scientific men in exploring this subject to its uttermost, for it is one of the greatest importance to mankind, and ought to be most fully investigated before the vexed sewage question is decisively settled.

TRANSPORT OF CATTLE BY RAILWAY.

Part II.

It may be possible to comply with the requirements of the law when only a few trucks of cattle arrive at one of the stations named in the schedule of the Order in Council; but there can be nothing more absurd than the notion of compliance with them when multitudes of animals arrive at a station within a few hours, either to be put into trucks, or to pass through at once in the same train, or in a succession of trains rapidly following each other. Let any one endeavour to imagine the attempt made to give a pailful of water to each animal, or to conduct each animal to the trough that it may drink, on an occasion like the Falkirk Tryst in the beginning of October. This is the great fair at which the lean cattle of the Highlands of Scotland are sold to the graziers of the south, and at which there will ordinarily be found about 120,000 head of oxen and sheep, almost all of which are driven off, after being sold, in lots of from 20 to 50 and upwards, to be transported by railway as speedily as possible to different parts of the country. It may safely be declared impossible to give them water unless it can be supplied to them in the trucks, and that not by pails, but by some more convenient contrivance admitting of expeditious application. Yet how necessary it is that both food and water should be supplied, will be very apparent if we consider the ordinary case of cattle from the north of Scotland, driven for a distance of perhaps thirty miles, to a railway station, say to Golspie, and there put into trucks, arriving at Falkirk about 48 hours after, where they stand for many hours on the market-ground, and are then as quickly as possible sent off again by railway to a very distant part of the country. Troughs at railway-stations are, in such circumstances, a mere absurdity, and the only trough of any real use would be one in each truck itself, to be filled by a hose as the engine is supplied with water.

Nor can it be said that there is any impossibility in this; for a trough of this kind, capable of adaptation to the ordinary cattle trucks at present in use, has been contrived by Mr. Reid, of Granton Lodge, near Edinburgh, the inventor and patentee of an improved cattle truck. Mr. Reid received a medal in 1865 from

the Highland and Agricultural Society of Scotland, for his Railway Cattle Trough, a very simple plan, which could be applied to every truck containing cattle, at a very small cost; yet probably there are not half-a-dozen trucks provided with it on all the railways of Britain. This surely is a state of things disgraceful to railway directors and to all concerned. By the use of the railway cattle-trough, the difficulties attendant on over-crowded railway-stations, on occasion of a Falkirk Tryst or other great fair, would be at once and completely removed; the cruelty inflicted on animals would be greatly diminished, although other things are also requisite to make the mode of railway transport such as considerations of humanity require; and there would be a great improvement in the conditions both of lean stock arriving at the rich pasture-fields of the south, and of fat stock arriving in our towns to be slaughtered.

It does not seem necessary to give any description here of Mr. Reid's railway cattle-trough, nor of his patent cattle-truck, of which, however, it may safely be said that it is vastly superior to the trucks in ordinary use. Miss Burdett Coutts, ever ready to exert herself in the cause of humanity, purchased a number of these trucks last year, in order to introduce them on English railways, and the result of the first experiments made with them was exceedingly satisfactory. There seems, however, to be no progress made as to their general employment; the old method is the more easy, and will probably be persevered in until railway companies are compelled by Act of Parliament to make a change. It may be that something better than Mr. Reid's truck may be invented, and if so, let the best and cheapest kind be used; but meanwhile his truck and the ordinary cattle-truck are alone in competition, and only the most prejudiced minds can refuse to acknowledge the vast superiority of the former. It is due to Mr. Reid to state that he has for many years devoted his mind and labour to the directing of public attention to the subject of the transport of cattle by railways, and that he is not to be regarded as a mere inventor, seeking to make profit by his invention, but as a man actuated by humane feeling, and freely spending his own time and money for the good object which he has sought to accomplish.

It has not unfrequently been alleged by parties concerned in the cattle trade, and by railway officials, that cattle will not eat or drink in trucks. Experience proves the falsehood of this notion, which might well have been set aside as ridiculous even without being put to the proof. Animals will eat and drink whilst the train is in motion, at least if the motion is tolerably equable; but even if they would not do so, they might easily be fed and watered

whilst the train stops at stations or is detained in sidings, as is often the case with cattle trains.

The exposure of cattle to cold winds and all kinds of weather in the ordinary cattle-trucks is very injurious. Animals which have been accustomed to the perfect shelter of feeding-stalls and farm-yards are placed in trucks without cover, and into which wind and rain may beat during their long transit. The effect of this is naturally very bad. Not less injurious are the frequent concussions in trains, when railway-trucks are unprovided with buffers, or when cattle-trucks are in trains containing others loaded with minerals or other heavy goods. An improvement has been made in this particular, and buffers have been more frequently applied to cattle-trucks; but for a long time it was usual to convey cattle by railway without any precaution against what must be a very serious shock to the animal system, nor has the old practice been generally relinquished.

It is evident that the whole system of transport of cattle by railway needs reform. The old method of driving cattle along the road is no longer to be thought of. But the new method must be brought into accordance not only with the interests of railway companies and with the facilities which railways afford, but with the conditions required for the animals themselves; and so must serve for the general benefit of the public, to whom their healthful transport is in one point of view a simple matter of pounds, shillings, and pence, whilst in another it is a question of humanity, and demands the attention of every one who detests cruelty to animals, and particularly when perpetrated on a large scale.

J. Montgomery.

Liverpool bids fair to become the unhealthiest town in England, if it is not so already—the death-rate having latterly risen to 50 in 1,000; so that the Health Committee has its hands full. The principal object of the Commission which is now sitting is to examine the foundations of the houses of certain districts, some of which are composed of cinder refuse from the ashpits, and others of chemical refuse; so that, added to the chronic dirt and bad drainage, there are the distinct evils arising from the exhalation of deleterious gases. The small-pox, which is terribly rife in Liverpool, is propagated, *inter alia*, by the fondness of the Irish population for wakes, which, with the accompanying whisky and drunkenness, are constantly being held in the room with the corpse, no matter what has been the cause of death. It is mentioned in the *Medical Times* that a child died of small-pox, and that the mother immediately placed the corpse on the table, and marched off with the sheets and blankets, just as they were, to the pawnshop!

AMERICAN FOOD SUPPLIES.

Although a large share of the attention of capitalists in America is given to establishing manufactures, opening mines, and providing means of transport, and though, in the confusion of half-developed schemes and multifarious projects in every department of industry, a constant clamour is kept up for protection and encouragement, the real source of the nation's wealth is at present, and for a long time must be, its fertile and yet uncultivated soil and its wide range of climate and varied physical character. The capacity of the United States as a food-producing country is but slightly indicated in what has thus far been done to develope its natural resources. There is hardly any product of the soil of prime importance in the food supply of the world which may not be raised with profit here, though the experiments thus far have been on a small scale, except in the articles actually required for the consumption of our own people. Systematic efforts at raising tropical fruits in the South, at manufacturing native wines in the valley of the Mississippi and on the Pacific coast, and at producing sugar from beets, have been made by individuals here and there with a degree of success which proves that if attention were given to these matters, and the proper appliances brought to bear, they might contribute largely to the markets of the world, and to our own national wealth.

In the North-eastern States, where the soil is somewhat hard, thin, and cold, little is done by the thrifty farmers beyond supplying the local demand for necessaries, and sending a small surplus to the ports to form an infinitesimal item in the cargoes sent abroad. Moderate crops of wheat, Indian corn, and potatoes form the bulk of the agricultural products of New England. A few factories may be found among the hills, where starch is manufactured from the potato for use as an article of food; and orchards of sugar-maple afford a luxury peculiar to this country, which finds a ready sale at all times, but seldom gets abroad. In the middle States the soil and climate are well adapted to the cereal grains, and large crops of wheat and corn are raised for exportation in the form of flour and meal. The flour-mills of the Genessee valley, in western New York, have a wide celebrity, and

the Quakers of the Brandywine section of Delaware and Pennsylvania are famed for the corn-meal turned out at their busy mills. In the market of New York the brands of these manufacturers are relied upon as indicating first-class excellence in the articles bearing them. The Brandywine millers have for three generations been growing rich by preparing for the market in the best manner the luxuriant corn crops of that region.

In the districts thus far mentioned there has been a thrifty population for more than a hundred years, and though it has used none but the rudest appliances for extracting the riches of the soil, it has made a thorough use of its superficial capacities. No expensive systems of irrigating or fertilizing are likely to be tried so long as the great fund of unoccupied land in the West holds out, and is found to possess the natural fertility almost universal in the vast basin between the Alleghany and Rocky Mountains. Not one quarter of that large territory is now under cultivation, and that which has been taken up by the settlers has been worked in the most superficial manner, and its powers of production tested only in a very slight degree. The canals and railroads leading eastward from the Mississippi valley are continually loaded with grain, and it is just beginning to be found that fruit-raising, and even wine-making, would be still more profitable than gathering great crops of wheat with hardly any other attention than careless ploughing, sowing, and reaping. The land there is so abundant and cheap, and the labour required for a plentiful supply of the necessaries of life so slight, that there is little stimulus for careful husbandry and the thorough development of the resources of the soil. Hence it is that we are but slowly finding out the food-producing capabilities of our country. These attractive western plains, too, draw off the labourers of the east, and prevent a material advance even in this older section. On the western slope of the mountains is the same scene of lavish profusion on the part of nature, and a lazy acceptance of her gifts by man. California has heretofore been regarded as a great grain-growing State, and huge cargoes of wheat have been carried from the port of San Francisco year after year; but now the people are finding that the semi-tropical climate which they have been praising for the mere delight of the atmosphere and the beauties of the sky, fits that district to be the fruit-garden of the continent. Grapes, apples, and pears come over the Pacific railroad, and appear fresh in the markets of New York, while oranges, figs, and all manner of plums are easily produced. A late official report declares that it is a waste to devote the soil of the golden State to the raising of

grain and cattle when it might be made the vineyard of the nation, stored with greater riches than her famous mines contain. Already the wines of California are highly prized at home and abroad, and her fruits are finding their way to the markets of the world, in which they meet with few rivals for beauty and delicious flavour. It is there, too, that the largest experiments have been tried in the manufacture of beet sugar, and the success which attended them during the past season near Vallejo has been so complete that it is reported that a large number of capitalists are now engaged in putting up manufactories, and preparing gardens for the work of the coming summer. They are luxuriating in strawberries, water-melons, and newly-gathered pears at San Francisco at this very moment.

The Southern States, which in the old days of slave labour were so largely devoted to the culture of cotton on extensive plantations, have, in the last few years, been undergoing a remarkable change. The lands are now divided off into farms, and a variety of crops cultivated, of which cotton is an important one; and under this system it is thought that the production of that staple will ultimately equal or exceed the old supply, while at the same time the corn and vegetables needed by the inhabitants will be raised at home instead of being brought from the north. There, too, a greater amount of enterprise is displayed than in former years, and new sources of wealth in the soil and climate will be made to render up their treasures. It is already found that tea and coffee, as well as tropical fruits, can be successfully raised in the Southern States.

In all quarters there is a chaotic state of partial development. Few organisations have been formed to complete the work, and exact information regarding details is not easily obtained. Time and money applied to the department of agriculture are bound to produce great results; but so long as we are determined to compete with all the world in every other department of industry as well as this, the process of development and the perfection of methods of working will be comparatively slow.

A. K. Fiske, New York.

PUBLIC HEALTH.

Part XII.—Sanitary Supervision (Intermediate).

The principle of local government is dear to the heart of every Englishman; in it he sees a pledge of independence and freedom, whilst centralisation or imperialism is, to his mind, inseparably connected with tyranny and ultimate ruin—and he would point to the downfall of empires in these later times as the strongest link in a long chain of evidence proving the truth of his opinions.

Much might undoubtedly be said in favour of the prompt action, decisiveness, and energy of a powerful central government, but no argument could convince the true-born Briton that undue interference on the part of the central authority was not an encroachment on his liberty and the rights he holds by Magna Charta.

Probably the model of English departmental government would be found to consist in a three-fold distribution of labour, responsibility, and power. First, the *local* division, a perfect little *cosmos*, with its own magnates and its own executive, for carrying out the laws and framing bye-laws connected with the welfare of its people; secondly, the *central* authority, for advice, assistance and encouragement, as well as for a spur or a corrective where such is required; lastly, the *intermediate*, or inspectorial agency, communicating between centre and periphery, in the interests of one or the other, or of both, as the case may be. Such is the model, but I need scarcely add that the symmetry is not in all cases preserved.

Confining our attention at present to the health departments of the State, it may perhaps be taken as a natural sequence in the history of our Health Legislation that local interests should in some cases be lost sight of, in others made quite secondary to the interests of the central government.

We have already seen (Vol. I., p. 125,) that this is the case with the Census returns; that the schedules of the enumerators, those units which are indispensable for the local gauging of a people's health, are hurried off to the metropolis, to become absorbed into the totals of ponderous "Blue Books," totals which tell of parishes and districts, but not of towns as we know them, with the boundaries which we recognise, or of the streets and courts of which they

are composed. The coming Census of April next would seem to offer an opportunity for securing local details of population, etc. for local use. The information would be invaluable, especially if we are to have a registration of sickness; and it might now be obtained at a nominal cost, if local authorities would only help themselves, before facts, so important on the spot, are floated off and lost for ever in the great Census stream.

A similar central monopoly has dealt with the mortuary returns of the country. The local death register is in general a sealed book to the local inquirer, whether lay or medical; he must wait three months for the quarterly return of the Registrar-General before he can learn the numbers dying around him, or the diseases which are spreading among the people; even then he gets totals for districts when he wants particulars concerning streets, if his object is to trace out the seeds of sickness, and to uproot the soil in which they germinate and grow. The cause of much of this want of balance between central and local management is undoubtedly due to the supineness of local authorities and people generally in health matters. A man will care for everything before he looks to the air he breathes, the water he drinks, or to those evidences of unsanitary conditions which are the sure forerunners of ill-health, incapacity for work, and eventual poverty. No force short of a plague can rouse his attention to these matters. Even cholera and small-pox have required the weight of central authority to force upon vestries and other local bodies the unwelcome measures necessary for their prevention.

It is no wonder then that health legislation should incline to centralisation, seeing that it has emanated from the Government rather than from the people; or, perhaps I should say, from a few zealous sanitarians acting through Government on the ignorance and obstinacy of the masses. In my former papers I have dealt with the central authorities in the several departments which are concerned with the public health. I now go on to say a few words on the intermediate officers—the inspectors of the various departments whose duty it is to gather information, to stir up local authorities, to smooth local susceptibilities, or to convey rebuke when it is rendered necessary by neglect.

Some of these officers have already been described in connection with the departments under which they act—those under the medical department of the Privy Council, for instance—and I need not do more than recall what was said (Vol. I., p. 405,) on this subject. The inspectors are ranged under three heads:—1. For *vaccination*—one resident in London to superintend the collection of lymph

for Government supply, and four regular visitants to the various vaccinating stations throughout the country. 2. For *local inquiry*, either special, concerning alleged sanitary neglect, or generally, into conditions affecting health, such as climate, occupation, or diet. 3. For *scientific investigation* into questions affecting the origin or spread of disease. Passing to the

Board of Trade, we find an Inspector appointed under the *Alkali Works Act*, to register all manufactories, such as those for alkali, sulphate of soda, and sulphate of potash, in which muriatic acid gas is evolved, and to see that not less than 95 per cent. of the gas is condensed, and rendered harmless to vegetation and human life. Perhaps there is no better specimen of the piecemeal nature of our health legislation than the Act of which we are speaking. Other gases injurious to health are dealt with under the ordinary Nuisance and Public Health Acts; but smoke has had a special Act to itself since the year 1853, and muriatic acid gas became a special exception ten years later.

Dr. R. Angus Smith is the Inspector appointed under the Alkali Works Act, and his reports have an interest beyond the narrow limits within which they are supposed to be confined.

The Home Office has been mentioned as carrying on the work of inspection for the *Local Government Acts Office* by means of three engineers, whose chief duties are to settle the boundaries of districts which desire to place themselves under the Public Health Act, 1858, to inquire into the circumstances of places with less than 3,000 inhabitants, which are not allowed to adopt a Local Government Act, but try to do so with a view to shirking sanitary duties and responsibilities; lastly, to examine into default of local authorities under Section 49 of the Sanitary Act, 1866, and from special drainage districts under the Sewage Utilisation Act of 1867.

Still under the Home Office, but distinct from the Local Government Acts Office, comes the Medical Inspector under the various *Burial Acts*. There is one for the whole country, and he reports to the Secretary of State direct on the condition of burial grounds in England. When a ground is full, or nearly so, it is closed, possibly under certain limitations, by order of the Secretary of State; when choice has to be made of a new site, it lies with the local authority, subject to approval by the same central officer.

In the *Factory Acts* of 1853, 1856, and 1867, we have the outcome of legislation dating as far back as 1802, for the protection of operatives, especially women and children, engaged in mines, collieries, and manufactories of various kinds. These admirable Acts

"have been passed," in the words of Mr. Baker, an Inspector of long experience, "with a view to educate the young and to fix such a reasonable limit to the hours of labour that the workers under them may not only be protected physically, but have time for mental and social improvement also. Restrictions have been placed upon the capital of masters, and responsibilities on their servants and upon the parents of children, both of which were necessary for the well-being of the manufacturing districts. Excessive labour had at one time produced a class of diseases peculiar to the factory system, which have greatly decreased under its present limitation; whilst thousands of children have been and are now being educated under the Factory Acts who otherwise would never have been educated at all."*

Mr. Baker and Mr. Redgrave are the two Chief Inspectors under the Factory Acts, with a staff of no less than forty sub-inspectors, who have fixed districts throughout the kingdom, to which their inspection is confined. London, for instance, has three sub-inspectors, with 1,200 factories a-piece; Manchester has two, Sheffield one, and Scotland three, with some 600 factories to each. The duties are varied and arduous, yet no special training would seem to be required in those who undertake them. To be "a man of the world," and "to know how to deal with his fellow men,"† appears to be the chief qualification apart from satisfying the Civil Service Commissioners in an examination held by them. The bar, the army, and the universities are the fields from which the Home Secretary has made his selection. The inspectors have an almost unlimited range, extending even to workshops, over which they have a concurrent jurisdiction with the local and locally appointed inspectors under the Workshops Regulation Act of 1867. They "exercise supervision over the condition of factories, the existence of nuisances therein, the ventilation, the suppression of noxious gases and overcrowding."‡ One curious and anomalous exception, however, exists with regard to bakehouses. Bakers are specially favoured and have a special Act to themselves, viz., the Bakehouse Regulation Act, 1863, under which "the local authority is to prevent the employment of children in that part of the bakehouse in which the bread or confectionery is baked," while the factory Inspector has the control of the other parts of the establishment.§

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* "The Factory Acts made Easy," by Robert Baker, Esq,, one of H.M. Inspectors of Factories, Leeds.

† Evidence of A. Redgrave, Esq., before Royal Sanitary Commission, Q. 7976.

‡ Royal Sanitary Commission Evidence, Q. 7964. § *Ibid.*, Q. 7964.

The inspection of *coal mines* is another exceptional instance of health legislation. The inspectors of mines are appointed by one of Her Majesty's Principal Secretaries of State, to see that ventilation is properly carried out, that the lights used are safe and according to law, and to report generally on the condition of mines and machinery so far as they affect the safety and health of the men who work in them.

Passing over the inspectors under the *Poor Law and Lunacy Commissioners*, which have been already* shortly considered, I shall, in the last place, say a few words on the inspector under the *Land Drainage Acts*, which are administered by the Inclosure Commissioners. These Acts were to improve the drainage of land for agricultural purposes, as well as to carry out and control the arterial drainage of river valleys. Storeage of water may be provided for cattle or for irrigation purposes, but only incidentally for human use.†

The duties of the Inspector are therefore of an engineering kind; he reports on schemes for drainage and irrigation, arranges the necessary boundaries, and ascertains that the dissentients to the scheme do not amount to one-third of the landowners of the district.

The inspectorial agency, then, is one of no mean importance to the Public Health. Men of special intelligence and special training, the Inspectors, as might be expected, have done good work in the country by spreading information where it is most required, by rebuking the careless or indifferent, and conveying local details, otherwise inaccessible, to the proper central authority. They must continue to occupy an important position in any sanitary organisation, and no change beyond a redistribution or condensation of the duties of the several Inspectors will probably be contemplated under the reformed health legislation of the future.

E. T. Wilson.

[to be continued.]

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* Vol. I., 644, and p. 12 of the present vol.

† Royal Sanitary Commission, Q. 1518.

NORWEGIAN FOOD NOTES.

During a recent tour in Norway, I had frequent opportunities of examining the food resources of the country, which is as poor, cold, barren, and unproductive as any part of Europe. Nineteen-twentieths of the whole country is rock, growing nothing but pine trees, moss, and in some places a very little grass. Even in the remaining twentieth part the soil is poor, and the winters are excessively long and severe, so that it is necessary to feed the flocks and herds entirely upon hay during the greater part of the year. This limits the productive power of the country to a great extent. Some years ago a farm of 290 English acres of the better sort of land supported only 20 cows, 7 horses, and a score or two of sheep and goats, and yet the greater portion of the farm was pasture and during the summer the stock were fed upon the mountains; so that it took some 200 acres of land to produce hay enough to feed this small number of animals during the winter.* While farming is carried on under these difficulties, there are no manufactures, hardly any mines, and but little trade. It follows that the country is thinly peopled, and the people are very poor. This state of things renders the food system of the country altogether different from that of England, inasmuch as very little wheat is grown, and but few turnips. The former will not ripen in most parts of Norway, any more than it will, in a general way, in the extreme north of Scotland. The principal crops of the Norwegians are oats, rye, barley, and potatoes. The last named are grown largely, and put to all sorts of purposes for which we never use them. The annual quantity of corn, rye, barley, oats, &c., sown in the country according to the latest statistics consists of about 2,816 quarters of wheat, 8,850 do. rye, 62,700 do. barley, 38,000 do. mixed grain, 18,600 do. oats, 5,000 do. peas, and 277,400 do. potatoes.

The supply of animal food is also managed very differently from the modern English practice. All the animals which are designed for the butcher are killed in the beginning of the winter and salted down on account of the great difficulty of procuring food

* The animal stock of the whole country some few years ago consisted approximately of 154,447 horses, 949,935 oxen and cows, 1,596,199 sheep, 357,102 goats, 113,320 pigs, and 28,000 tame reindeer.

for the flocks and herds during the long, hard winter. Indeed, none but the richer classes are much in the habit of eating meat at all, salt or fresh. Poultry and eggs are not very plentiful in Norway, but fish abound. Indeed, the fisheries form one of the most important Norwegian industries, and the exportation of fish to England and other countries is very large. I propose to give some account of this hereafter, but at present it is sufficient to say that fish forms a common article of diet, that the large rivers yield plenty of salmon, and the smaller streams far inland are full of trout. Nevertheless, the people generally eat the fish salted or cured in some way. Raw salmon dried in the sun is a common and favourite dish. There is, however, one great evil which follows this eating of salt meat and fish. Leprosy, or a cutaneous disease known by that name, is not uncommon in Norway. Now the Norwegians are a well-grown, cleanly, intelligent, and generally healthy race; and as the existence of such a disease among such a people indicates some peculiar cause, there seems no doubt that it is occasioned by the general and exclusive use during the winter of salt meat and salt fish (often imperfectly cured), and aided in its operation by the severity and long continuance of the cold. If the Norwegians would grow turnips for winter supply, they might probably rid themselves of this disease, and at the same time greatly increase the food-producing power of their country. They would also cease to be entirely dependent on hay for the winter food of their flocks, and might probably be able to keep a much larger amount of stock, which might be advantageously exported to the London markets, to the benefit of both countries. The staple articles of Norwegian food are therefore oats, barley, potatoes, milk, butter, cheese, salt fish, and occasionally salt meat—generally bacon. White bread, such as every English labourer expects to eat, is in Norway a delicacy only to be procured in large towns or at the best hotels, and fresh meat is seldom to be had even by the traveller who is prepared to pay for it. I have not included in the above list of culinary products the bark-bread which is said to be sometimes eaten. The truth about bark-bread is this:—In former days, the poor peasantry in remote mountain districts were in the habit of occasionally mixing the soft inner bark of pine and birch trees with the meal, and making bread of the compound. The last time when this took place on an extensive scale was in the famine year of 1813, when the coast was blockaded by the English fleet. But as late as 1835, according to Mr. Laing, in his "Residence in Norway," there were still districts where this food was occasionally used. I doubt whether it is

ever used now, and I certainly never heard of it. The bread in question was made of the inner rind next to the wood, taken off in flakes like a sheet of foolscap paper. The bark was then steeped in warm water to soften it and take away the astringent juices, then dried in the sun, pounded into small pieces, and mixed with corn and ground into meal, the meal being subsequently made into bread in the ordinary manner.

The most common food of the peasantry in Norway consists of various forms of porridge and of *flad bröd*, which is made of various substances, such as oats, barley, and potatoes. The oats are not shelled, as is the practice in Scotland when oat-cake is made, but are ground up husks and all, and often mixed with potatoes. The meal is then spread on a griddle or frying-pan, and made into thin flat cake not unlike oat-cake, but coarser. It is as thick as card-board, and often a foot or 18 inches square. Being so thin, a hungry man can well eat some square feet of it at a meal. Mr. Williams, in his book,* says that "*flad bröd* is just like the inside of a hat-box when the lining is stripped off." I must protest against this assertion. When good and new, *flad bröd* is crisp and most excellent, though of course there are many different qualities to be met with, and it is often kept a long time, which naturally does not improve it. Nevertheless, however stale it may be, it is always eatable, which is more than I can say for all kinds of bread.

It will be seen that Norway is not exactly the country for an epicure. I once travelled for four days in one of the wildest districts, in which there were no inns. I walked hard all day, lived mainly on *flad bröd*, milk and Liebig soup, and slept on the floor of miserable huts. On the fourth day I was to arrive at a place called Nystuen, where there was an hotel, of which I had formed (as it turned out) a very exaggerated estimate. I solaced myself by the thought of the luxuries to be enjoyed at Nystuen. Visions of champagne, salmon, and reindeer venison floated before my longing eyes, as I munched stale bread, and drank the water of the lake. At length the wished-for hour arrived, as the inn appeared in sight. I rushed to the door, and found that the bill of fare included nothing but potatoes, bacon, and two or three eggs. This was too great a disappointment; and, as the day was yet young, I ordered horses, and drove on to the next village, where at least I got some fish, in addition to the inevitable bacon.

M. Browne.

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* "Through Norway with a Knapsack."

THE NEGATIVE POLE OF COOKING AND DINING.

Part II.

After the *tchuala* had been discussed by the one of the pair who was competent to the feat, and a due interval had been allowed for settling the draught, a dish was borne in at the bee-entrance in a similar way, and announced as *amabele*. It was contained in a small pot, and looked marvellously like sawdust; and what must be further recorded is, that it tasted like what it looked. It had to be taken out of the pot in fingersful, and eaten in pinches, just as one would eat dry sawdust. The *amabele* is the Kaffir corn, the staple farinaceous food of the aborigines of South Africa, and is a species of millet-seed crushed between stones. It is not as repulsive to the uninitiated and untrained European palate as the *tchuala* is, for the stomach receives it acquiescently and with passive indifference. It is simply a dry, altogether tasteless powder, which it is difficult to swallow with the provision for insalivation that nature has given.

After the *amabele* came, third in rank of succession, the next Kaffir dainty, *amasi*, which is simply cow's milk allowed to stand in a vessel, together with a remnant of other stale milk of the previous day, until it turns sour and curdles. *Amasi* is no bad thing when it appears at a white settler's table in clean porcelain, is delicately prepared, and is eaten with fruit and sugar. But it is another thing when it is administered, as upon this occasion, in a pot of closely woven grass that has been used, without any intervention of water, for a continuous succession of guests time out of mind, for it has then acquired a very pronounced flavour of unsavoury cheese and sour milk, and the slippery masses of curds have to be cautiously attacked. Unfortunately the writer cannot say much more for *amasi* in its original and most negative state than he can for its Kaffir associate, the renowned *tchuala;* for in their most negative form the products of both vinous and acetous (if not putrefactive) fermentation are alike very bad.

The travellers, indeed, would have gone supperless and hungry to bed, or rather to floor and saddle, if it had not been for the happy luck of at last achieving a small bowl of freshly-drawn milk, after much stumbling about in the mazes of the Kaffir

vocabulary. Neither of them could by any possibility recover from their memory, in this case of great need, the Kaffir word for the unsophisticated and uncoagulated juice of the cow; and as fresh milk belongs properly to children rather than to grown men in these parts of the world, there was not the most remote chance of the Kaffir conception straying of its own unassisted accord in the right direction. It would have been insolent indignity to have suggested baby's food to such high and mighty chiefs as had come to the Kaffir's door and hearth on this soaking, torrent-swollen night. It was only when by a piece of lucky inspiration it occurred to them to go pantomimically through the operation of milking a cow, that a shrewd piece of venerable Kaffir maternity seized the leading-string of the idea, and nimbly disappeared, returning soon afterwards with a bowl of fresh milk.

As the sun rose clear in a bright azure sky on the following morning, the travellers were on their way to circumvent the still impassable torrents by climbing the mighty hills round their heads, until, after some hours of adventurous progress through grand scenery and under a scorching sun, a spot was reached where more civilized entertainment was possible.

It will be deemed no inapt termination to this sketch if the bills of fare of the actual dinners under the two opposite poles be now presented together, side by side, for comparison and contrast:—

Carte of Dinner (Positive pole), Worshipful Company of Grocers, London:—Turtle soup, thick, clear; turbot, salmon; mullets à l'Italienne; trout sauce aux câpres; stewed eels; fried whitings; croustade de mauviettes à la Macédoine; ris de veaux à la dauphine; chapons à la Perigord; chines of mutton; boiled chickens; tongues; Albion hams; pâtés de pigeon; roast chickens; turkey poults; capons à la financière; quarters of lamb; baron of beef; woodcocks; ducklings; goslings; wild ducks; champignons à la Bordelaise; petits pois au naturel; pâtés de foies gras; gelées marbrés; gelées de pêche; gelées à la Russe; crêmes au noyau; compôtes d'orange; Charlottes à la Bohémienne; gateaux à la Lorne; fruit tarts; cheese cakes; Sir Watkin puddings; puddings glacés; strawberry-cream ice; ginger-cream ice; orange-water ice; lemon-water ice.

Diner a la Kaffir (Negative Pole).—*Hors d'œuvre:* Ox, or goat, *sanglant;* to be swallowed without skinning or cooking. *Entrée: Tchuala au* musty gruel and stale small beer. *Pièce de Résistance: Amabele, au* saw-dust, *sec. Entremet:* Sour milk *au goût de fromage.*

R. J. Mann, M.D.

LIVING ABROAD.

If ever there was a time when we could realize how very small the world is, it is at the present, when there is scarcely a nook or corner which some adventurous F.R.G.S. has not explored, and scarce a city or town where some representative of the British nation may not be found either officially or unofficially resident. So great indeed is the intercourse between civilized nations (when no war is raging) that English people think as little of changing their abode from their own country to another as they would of migrating from one town to another. Many more people would go, and are always talking of going to this or that kingdom, but are prevented by their ignorance of the cost of living, of which they are unable to obtain reliable knowledge. Not only for this class of wanderers, but also for those who from official or commercial reasons are obliged to expatriate themselves to far distant shores, information as to ways and means is very valuable, and I propose to briefly detail the cost of living in the various foreign capitals, as far as regards persons moving in good society. The Reports of the Diplomatic service contain the unbiased opinion of men who are excellently qualified by experience to judge on these points.

The broad feature which strikes us is the unanimity with which prices have increased within the last few years. We in this country complain bitterly of the great expenses incurred in living decently and keeping up a respectable position; but it may be some consolation to know that other countries have increased their prices also, and in some cases to a much greater proportion than is the fact in London. It is true that we may not all live in the cream of society when we are abroad, as our diplomatists are obliged to do, but with certain modifications household expenses are much the same wherever we go; and, after all, we must remember that in foreign capitals the society is limited, and that all foreign residents move very much in the same circle.

Let us commence with German towns, and take Berlin. A single man could live here, thirty years ago, modestly but comfortably, for 300*l.* a year; but this is barely represented by 500*l.* now-a-days. House-rent has doubled, and in some cases almost trebled; and Lord A. Loftus mentions that a set of unfurnished rooms which

he rented in 1853 for 1,500$ (218*l.*) now lets for 3,000$ (436*l.*) One reason of this is, that Berlin has become a central residence for wealthy people, and the different Diet meetings have attracted the provincial nobility to the city, so that, instead of a sleepy royal residence, it has become the resort of a large manufacturing society, and "with the marble staircases and the stuccoes considered necessary in every house, luxury has entered and imposed its rule upon the inhabitants." Wages, too, have gone up; men servants in 1850 were content with 12 thalers a month (1*l.* 15*s.*), but now they want 20 thalers (2*l.* 18*s.* 4*d.*). Beef in 1850 was 37 pfennings (about 4*d.*) per lb., and now it is 72 pfennings, or about 7*d.* Wheat was 5*s.* per *scheffel* (1½ bushel), whereas it is now 7*s.* Potatoes were 1*s.* 5*d.* the scheffel, and are now 2*s.* 5*d.* The prices of oats and horsekeep are also largely increased, and as M. Victor de Magnus observes, "I can well recollect when a man with 100,000 thalers (13,850*l.*) was considered a wealthy man; he is now only just able to maintain himself." Mr. Bunsen, too, corroborates these facts, and states that the cost of living, including rent, servants, carriages, and furnishing has increased quite 90 per cent.

In the quiet little town of Coburg, the rise within the last twenty years was 50 per cent. in rent, wages, and horsekeep. The cost of provisions is even greater; and this is imputed to the improved communication with Berlin, so that eatables are sent there to obtain a better price. At Dresden, furnishing has risen from 10 to 15, carriage and horses from 15 to 20, and wages 50 per cent. Mr. Burnley's furnished apartments, consisting of twelve rooms, offices, and stables, cost him 300*l.* a year, which does not appear out of the way, especially, as he remarks, when diplomatists generally have the screw put upon them for the honour and glory of old England; and he attributes the increased cost of living to the residence of bankers and others who have made their fortunes, and also to Dresden being a favourite resort of the Americans, who always manage to run up prices wherever they go.

For ordinary people here is a comparative table of prices:—

	1850	1870
House-rent, per year	£55	£96
Furnished apartments—		
Eight rooms, per month	£8 5	£13 to £14
Hire of carriage and horses, per month	£11	£14 to £15
Female servants, per month	4*s.* to 6*s.*	9*s.* to 12*s.*
Men-servants, including livery	12*s.* to 16*s.*	18*s.* to 24*s.*

At Stuttgardt (Wurtemburg) expenses have considerably increased, owing, it is said, to the influence exercised by Queen Olga, who

is a Russian, and who has, since her marriage with the King, introduced a luxury of living which was before unknown. House-rent, which in 1850 was 120*l.*, is now 200*l.*; wages, instead of 7*l.*, are now 10*l.*; and the expenses of general housekeeping are now doubled. The following is the comparative cost of articles of ordinary consumption :—

	1850	1870
Eggs, per couple	not quite ½*d.*	about 1*d.*
Mutton, per lb.	6*d.*	10*d.*
Butter, per lb.	6½*d.*	1*s.* 1*d.*
Fowls, each	10*d.*	2*s.* 2½*d.*
Vegetables	¾*d.* per head	2*d.*
Potatoes (rather more than half a bushel)	10*d.*	1*s.* 4*d.*

At Carlsrohe, in the Grand Duchy of Baden, Mr. Baillie states that the expenses of a single man are as follows :—

Apartments at Carlsrohe	500fl. a year.
Hire of furniture	30fl. a month.
Servant	18fl. a month.
Cook	14fl. a month.
Expense of living	6 to 7fl. a day.
Firing	25fl. a month.

Phillips Bevan.

A Cure for Black Beetles.—Many houses in London and other towns are infested with black beetles, which abound particularly in their lower apartments, enjoying the warmth of the kitchen, and issuing from their holes to ramble over the floor at night, in search of bread crumbs and other such articles of black-beetle food. There are many to whom a simple remedy for this nuisance is well known,—the keeping of a hedgehog in the house, with full liberty to roam about the infested apartments. But this is not so well known as it ought to be, and some of our readers may be glad to receive information that they can thus, with great facility, free their houses from a nuisance which they feel to be grievous. A hedgehog may be bought in London at a very small price, or it may be procured in the country when the family is there in the summer. It is easily tamed, perhaps more easily than any other animal. A hedgehog has been known to eat from the hand within a few hours after being captured. It is a queer pet, but not an uninteresting one. It readily becomes familiar with those who show it kindness, and refrains from rolling itself into a ball on their approach. The patter of its feet may be heard in the house during the night, and is louder than might be expected from a creature of its small size. When black beetles appear there is a terrible hurry-scurry, the hedgehog in pursuit of the black beetles, and the black beetles off to their holes. In a short time a single hedgehog will eat up the whole stock of black beetles in any house of ordinary size. The hedgehog must not, however, be left to feed upon black beetles alone. A little milk may be given now and then; animal food of any kind is acceptable; and nothing is better than an egg, but the shell must be broken, as the animal cannot break it for itself.

POPULAR FOOD ANALYSIS.

No. 11.—BREAD.

Bread, "that decaying man with strength supplies," is undoubtedly the most important article of food that we possess, and many of our readers may wonder why it has not been sooner considered. The reason has been, that we desired, when dealing with this subject, to have all our experiments most carefully matured and extensive in their number. The disagreeable disclosures which it will be once more necessary to make, will, no doubt, call down upon our heads the wrath of certain trade organs, who will possibly give us the title of "sensation analysts," as they have already done to some of our contemporaries; but we must once and for all assure our readers that we have no craving after "sensation," our object being simply to state the plain unvarnished truth about the condition of daily food as sold in the shops, and thus, if possible, to lead to an amendment of the laws on adulteration. Of what adulteration should be defined by law to consist must be left to our legal friends and other contributors to the *Food Journal* to write about and discuss. But as it appears to us that any substance whatever mixed with an article of food and sold, without the fact of such admixture being stated at the time of sale on a prominent printed or written label, constitutes an adulteration, we shall continue to hold up to public reprobation all such admixtures, until we have an authoritative definition of the word "adulteration" established by Act of Parliament. Of the substances which we have hitherto examined, one class only has been found to be mixed with poisonous substances, and we were therefore totally unprepared for their discovery in bread; but the fact which has been forced upon us is but too true. All the experiments detailed below have been executed with the utmost care, and we have only to invite a call at our laboratory from the editor of any trade organ, that he may see that no stone is left unturned to render our results as accurate as the present state of science will permit.

We have in many Latin authors intimate descriptions of the bread in use among the Romans; and indeed, during the investigations in the ruins of that unfortunate city, Herculaneum, which was so suddenly buried beneath the ashes of Vesuvius, there were found

two loaves quite uncut and still in a tolerable state of preservation. These loaves are described by Winckleman as being circular masses, about one hand and a half in diameter and five inches in thickness. They were both much alike in size, and were each marked with eight deep indentations, like the strokes on our hot-cross buns, all radiating from a common centre. These cuts were doubtless made by the baker to enable persons to break off a moderately small morsel, as cutting slices of bread was then unknown at table. It is to be presumed that the bread, even in the earliest ages of Greece, was so divided, because we find that Hesiod calls the loaves *oktablomoi*, which, most translators are agreed, refers to the eight cuts or marks. Very frequently, however, the Roman bread was only marked for breaking into four pieces, and such a loaf was called a *quadra*. From this arose the Latin expression for a man often dining out, which was *alienâ vivere quadrâ*, a phrase probably best translated by our own slang term, to "sponge." Originally, all the bread was baked by the Roman matrons in person; but as habits of luxury began to spread under the empire, these ladies employed special men to do the work, and themselves disdained the practice of such domestic processes.

The components of bread-making were then as now—flour, water, salt, and leaven. The latter substance was sometimes made by steeping millet in sweet wine and letting it ferment for a year. The best method of producing leaven, and, indeed, that used for the finest bread, was by steeping the bran or waste from the millstones in sweet white wine for three days, and then making it into little balls, which were dried in the sun. When it was desired to make bread, a few of these balls were set to ferment in a certain quantity of fine flour, which was then mixed with the rest of the dough. The Romans were very particular in the matter of bread, and had many qualities, of which the following may be noted as the principal varieties:—*Panis autophyrus*, the large household bread, of which no part was rejected; *panis atroplicius*, a bread for sick people, cooked in a sort of pie-dish; *panis astrologicus*, a sort of pastry; *panis azymus*, unleavened bread, stated by the great medical author, Celsus, to be good for weak digestion; *panis cacabaceus*, which was flavoured with a metallic taste by boiling the water used in bronze vessels; *panis militaris*, coarse bread made for the soldiers and baked on hot ashes; *panis sordidus*, the worst kind, given to the dogs. Most of these breads could be had in two qualities, similar to our first and second flour loaves. As luxury continued to progress, a new kind of paste was made called *panis madidus*, which was used by dandies to improve their complexion, and worn

plastered all over the face for a certain time each morning before appearing to exercise their powers of fascination on the fair sex! In England we find that, in the time of Henry III., the bread was made in three qualities, viz., *wastel bread* (fine wheaten), *cocket bread* (seconds), *bread of treet* (brown bread); and strict and effective laws were laid down as to its being of certain weight and quality. Fraudulent bakers were driven about the city with the loaves tied round their necks, and subjected to sundry other coarse but rigorous punishments.

For ordinary bread the old-fashioned leaven is still used in some places, but more commonly it is superseded by beer yeast or German yeast. The modern method of bread-making is as follows:—Proper proportions of flour, salt, and yeast are mixed with luke-warm water, covered up, and set in a warm place till fermentation sets in, and the mass swells up owing to the accumulation of gas. This portion, which is called the "sponge," is then mixed with more flour, water and salt, until a sufficient quantity of dough is obtained. The whole is then subjected to a vigorous process of kneading, usually by the hands and feet, and then having been allowed to stand for some hours, is again kneaded. The dough is now weighed out into loaves, placed again to ferment until they have become twice as large as when they were cut, and finally baked in the oven, which quickly stops any further action and produces the finished bread.

The action of yeast in causing bread to rise, is, that it sets up a fermentation chiefly with the natural sugar of the flour, which it transforms to some extent into alcohol and carbonic acid gas. The latter body being imprisoned by the glutinous nature of the dough, causes it to swell up, to become full of little air bubbles, and, in fine, to take the spongy form of well-made bread. When bread is made of the finest flour only, that is, flour produced by thoroughly removing the bran and retaining only the white central portion of the corn, this action goes on almost entirely with the sugar, while the starch being scarcely affected, retains its fine pure-white colour when made into bread. If, on the other hand, the finest flour be not employed, the bread will be grey and heavy. This is because the bran of wheat has been found to contain a peculiarly active body called *cerealin*, which resides in the *epispermum*, or sixth membrane of the grain, and possesses a great power of converting the starch into gum, sugar and lactic acid. Any of our readers can try this action by making an infusion of bran, and adding a little of it to a quantity of stiff starch paste. If the whole be kept in a warm place for a short time, the thick paste will change to a thin, acid, and badly-coloured liquid. It there-

fore follows that, if the flour should be "seconds," and contains some of this bran, it will be altered in colour when the hot water is added, because the starch will be partially converted into this acid and thin liquid, and so the resulting bread will be "sad" and sour. According to Vogel, the starch of really well-decorticated flour is only very slightly altered in bread-making, and can be even separated by washing the bread, as will be described under the head of Flour, in an early article. The following is his analysis of a good wheaten loaf, side by side with one which we some time ago performed by the same process on a loaf made with scrupulous care from a special flour, prepared by a new system of decortication, on the practical utility of which our opinion was being taken :—

Dried Bread (Vogel).		Dried Bread (Muter). (Perfectly free from bran.)	
Unaltered starch	53·0	Unaltered starch	57·93
Altered	18·5	Altered	15·82
Sugar	3·6	Sugar	2·90
Gluten, with some starch	20·7	Gluten (from nitrogen)	17·60
Undetermined	4·2	Ash	2·16
		Undetermined	3·59
	100.0		100·00

The bakers, of course, are well aware that only the most expensive flour will produce white bread, and they have therefore sought for matters which can be introduced into the dough so as to stop the action above described. This enables them to use common qualities of flour, and still produce what appears to be the best bread. The substances that have hitherto been in common use, are lime water and alum, but especially the latter. The action of alum in thus retarding the transformation of starch into gum, sugar, and lactic acid, can be easily tried. Let one cup be filled with stiff starch paste which has been made with ordinary water, and another be also filled with the same paste made with water in which a little alum has been dissolved. Let the same amount of an infusion of bran or malt be added to each, and then let both be placed for an hour in a warm place. If at the end of that period both samples be examined, it will be found that while the alumed one has remained unattacked, the other has become more or less fluid and sour. Thus it is evident that, so far, alum is useful in rendering available a flour which is of low quality, but its use is attended with the drawback that it has been deemed by many medical men to be exceedingly unwholesome. In a paper read before the Society of Arts by Dr. Dauglish, the dangers of the use of alum are thus summed up :—"Its effect on the system is that of a topical astrin-

gent on the surface of the alimentary canal, producing constipation and deranging the process of absorption. But its action in neutralising the efficacy of the digestive solvents is by far the most important and unquestionable. The very purpose for which it is used by the baker is the prevention of those early stages of solution which spoil the colour and lightness of the bread whilst it is being prepared, and which it does most effectually; but it does more than is needed, for whilst it prevents solution at a time that is not desirable, it also continues its effects when taken into the stomach, and the consequence is that a large portion of the gluten and other valuable constituents of the flour are never properly dissolved, but pass through the alimentary canal without affording any nourishment whatever." Against this opinion we have that of other medical men, some of whom go the length of saying, that in the proportion used in bread-making alum is quite harmless. Like many other matters on which doctors differ, the real fact probably is that, while a short use of such bread might be indulged in with impunity, a continued course of it would tend to some derangement of the system. But going upon the principle already laid down, viz., that anything added to an article of food, without a statement to that effect at the time of purchase, constitutes a fraudulent admixture, we must look on alum as an adulteration. The addition of alum to bread had been previously found to be so common that we were quite confident of finding it extensively present in London bread, but it is to be confessed that we were not prepared for its having apparently gone out of fashion in favour of a system of whitening far more dangerous. We refer to the use of the blue vitriol or sulphate of copper which has been said to be in extensive favour with Belgian bakers, but was supposed to be unknown here. This substance is really a more powerful agent in arresting the action of cerealin than alum, but it might be supposed that its poisonous nature would have forbidden its use even by the most unscrupulous. To show how extensive the employment of this dangerous ingredient has become, we give the results of twenty samples of bread all purchased in districts of London south of the Thames:—

No.	Alum, grs. per 4 lb. loaf.	Sulphate of Copper, grs. per 4 lb. loaf.
1	None	0·88
2	37·5	0·92
3	None	None
4	88	0·49
5	None	1·31
6	,,	1·29
7	,,	1·69
8	,,	1·76

No.	Alum, grs. per 4 lb. loaf.	Sulphate of Copper, grs. per 4 lb. loaf.
9	„	1·31
10	„	0·86
11	„	None
12	„	0·83
13	66	None
14	67·6	1·27
15	None	None
16	22	0·43
17	None	1·35
18	„	1·82
19	„	1·29
20	„	0·79

Here is a state of things that requires no comment. Out of twenty samples examined, only three were positively genuine, while sixteen were contaminated with an actual poison; and this is what is everywhere called the staff of life! It is true that no man could eat at one meal a dose of bread which would really poison him out of hand, but we would like to see the courageous person who would deliberately consume half a grain of sulphate of copper every day of his life; and yet this is what thousands seem to do in the South of London, without being aware of it. We do not as yet throw the blame upon the bakers, because it is possible that the salt may be put in by the millers, and the flour sold as making white bread without the use of alum; but this we are now testing by an examination of flour purchased at the same shops as the bread. We will communicate our results next month, until which time the public should suspend its judgment, which must indeed be heavy against the class in fault. We propose to extend our analyses to the bread supplied all over London, and thus to thoroughly sift so important a matter; but meantime it would appear that we can almost apply to adulteration the words of Mallet,—

> "Crimes lead to greater crimes, and link so straight,
> What first was accident, at last was fate."

We would suggest to the medical men in London that when they meet with obstinate cases of constipation, alternated at long intervals by attacks of painful diarrhœa and subsequent affection of the head, it would be well to cause the patients' bread to be examined, and if found thus contaminated, to try what a change of baker would accomplish, in case they might be in the position of the customers of No. 14, who consume, at the lowest estimate, 20 grs. of alum and one-third of a grain of sulphate of copper every day.

J. Muter, Ph.D.

ON THE SANITARY CONDITION OF DUBLIN.

Part II.

Until recently the pipe water supplied to the citizens of Dublin was furnished by a small river termed the Dodder, and two canals. The solid matter per gallon of pipe water varied from about 14 to 20 grains, and the organic matter from 2 to 3·5 grains per gallon. As the canals are largely made use of, and frequently by boats conveying turf and manure, it may be readily believed that these waters are not very pure. I found that the water of the Southern Canal became more and more impure as it flowed through the city, until at Macquay Bridge, close to the place where it enters the Liffey, it became loaded with organic matter, nitrates, nitrites, and ammonia. Near Macquay Bridge the water carriers formerly filled their barrels with the foul water of the canal and dispensed it largely in the populous suburban districts of Beggarsbush, Irishtown, Ringsend, and Sandymount.

Since 1868 Dublin has been supplied with excellent water conveyed from a granite district in the county of Wicklow. The River Vartry which drains about 22 square miles of elevated country, was dammed up in a valley, and now forms an artificial lake 420 acres in extent, situated nearly 23 miles from Dublin. Two large iron pipes convey the water to the city, where it is delivered at so great a pressure that very strong pipes and peculiarly constructed cocks are required to restrain it. Owing to its high pressure it ascends to the upper stories of most of the houses; and in cases of fire it may be delivered with great force and in immense volumes upon the burning houses. The Vartry water contains between 4 and 5 grains of solid matter per imperial gallon (70,000 grains). The organic matter varies from 2·2 grains to 3 grains per gallon; but, being derived from a peaty source, it may be regarded as not a serious impurity. There are but the merest traces of nitric acid and ammonia in the Vartry water, and it contains only a minute amount of lime. For detergent purposes and for baths no water could be more suitable, but owing to its freedom from earthy salts and to the rather small proportion of dissolved gases which it contains, it is rather insipid. Indeed most people in Dublin prefer

the flavour of the water of the city pumps, although it is in general a most impure liquid.

Soft water dissolves lead; the Vartry water cannot, therefore, be safely stored in leaden cisterns. Before this water was introduced into Dublin, I made some experiments relative to its action upon lead and the alloys of that metal, and I found that this water could be safely conveyed through pipes composed of an alloy of 96·5 parts of lead and 3·5 parts of tin. The water pipes in Dublin are all, except the large iron mains, made of this alloy; and the use of soft lead pipes is prohibited by the corporation. For cisterns where soft water may remain for a long time in contact with the metal, an alloy of 95 parts of lead and 5 parts of tin may be used with perfect safety; but this alloy is too hard to be employed in the form of pipes. Rain water attacks lead, and therefore it should be stored in slate tanks or in cisterns composed of an alloy of lead and tin, such as I have described.

One serious defect attends the use of the Vartry water, namely, its very corrosive action upon iron boilers and pipes. Not only does a boiler rust out very soon when in contact with Vartry water, but it discolours the water and renders it unsuitable for any purpose save that of conveying heat through a building. Copper boilers and strong lead-tin pipes will have to be substituted in Dublin for the iron ones now in existence.

The Vartry Works have cost the citizens of Dublin about 400,000*l.*; but the money has been well expended, for the improved water supplies have reacted most favourably upon the health of Dublin—at least, such is the unanimous opinion of our physicians.

The quantity of Vartry water which daily enters Dublin and its suburbs is more than 12,000,000 gallons, and this is sufficient to supply 35 gallons per head of the population of the metropolitan district. It is used for flushing the streets and sewers, and for cleaning the fronts of houses.

The well water in Dublin is very variable in composition, but it always contains a large amount of earthy salts. The rock formation underlying the city of Dublin is limestone intimately mixed with black shale, and is termed by geologists *calp*. Lying on the calp is a stratum of limestone gravel varying from 10 to 50 feet in depth. Dolomite, or magnesian limestone, occurs in some parts of the south and south-eastern suburbs. The drainage of the limestone gravel, the dolomite, and the calp, furnish the city and suburban wells.

The characteristics of the Dublin wells, taken as a whole, are their enormous amount of calcic carbonate, sulphate, and nitrate.

The origin of the calcic sulphate (gypsum) appears to me to be as follows :—In the black shale there is a large amount of amorphous sulphide of iron ; this compound oxidizes into ferrous sulphate, which, reacting upon calcic carbonate, produces calcic sulphate and ferrous carbonate.

In some specimens of Dublin pump-water I found only from 3 to 6 grains of gypsum, whilst in others I detected from 10 to 100 grains per gallon. The chalk (calcic carbonate) varied from 12 to 100 grains, the total solids from 20 to 200 grains, and nitric acid from a trace to 30 grains!

The amount of ammonia in some of the Dublin wells is extremely high, amounting in some cases to more than 1 grain per gallon, whilst in the Thames water at London Bridge the amount of ammonia, according to a determination of Messrs. Wanklyn and Chapman, was only 0·14700 grain.

In analysing water residues derived from Dublin pumps, I have frequently relighted, a score of times in succession, a recently extinguished taper by merely holding it over the crucible. The enormous amount of oxygen gas issuing from the decomposing nitrates was the cause of this phenomenon. The amount of organic matter in the well waters is rather small, being often not more than half a grain per gallon, and seldom more than two grains. It would seem as if the organic matter in the soil rapidly undergoes conversion into oxidized bodies—water, carbonic acid, ammonia, and nitric acid. No doubt the large amount of calcic carbonate and gypsum in the soil and underlying rocks hastens the decay of animal and vegetable bodies.

In the suburban districts rain water is collected in many houses and used for domestic purposes. It is generally very impure, being contaminated with all kinds of waste matters thrown out of the houses. The practice of keeping uncovered or imperfectly covered water-cisterns and barrels close to the ash-pit, or midden, is a most objectionable one. When refuse matters are discharged into the midden, some of them are certain to be wafted by the air into the water barrel. I have examined the sediment from the water barrels of many suburban houses, and almost invariably found it to contain *in abundance* every effete substance usually ejected from our dwellings. Water barrels and cisterns should be carefully covered, and the water drawn off from them through an iron stopcock placed 6 inches above the bottom of the vessel. These water reservoirs should be cleansed thoroughly and frequently.

Charles A. Cameron, PhD., M.D.

[to be continued.]

GLASS FOR WINE BOTTLES.

A RECENT number of the *Bulletin du Musée de l'Industrie* (Brussels, November, 1870), quoting from the *Moniteur Céramique*, calls attention to a subject which possesses a certain interest for wine consumers, viz., the absence of any recognised rational theory respecting the proper composition of glass for wine bottles. In place of relying, as at present, solely upon "rule of thumb," it is suggested that it would be far more satisfactory to have the vitrifying capabilities of the various ingredients determined by direct experiment.

There are difficulties in the way of establishing any theory of real practical utility, inasmuch as many sands and clays differ in their degrees of fusibility, in ways which are not explained by the closest chemical analysis.

As matters are now managed, in the absence of any fixed principles, the composition of bottle-glass in the majority of instances, the *Moniteur* observes, is in a great measure determined by the relative prices-current of the various available ingredients. It is hardly necessary to add that wine and the pockets of its possessors not unfrequently suffer in consequence.

The writer gives the following as the proportions of the ingredients generally used in France:—Yellow sand, 100 parts; kelp, 30 to 40 parts; alkaline ashes, 160 to 170 parts; new wood ashes, 30 to 40 parts; yellow clay, 80 to 100 parts; broken glass, 100 to 140 parts.

Coloured sands are preferred to white. Owing to the improvements in the manufacture of soda, the use of kelp has been discontinued in works situate at a distance from the coast. Broken glass should not be used in the composition of bottles destined to hold *mousseux* or effervescing wines, as it renders the material more brittle.

The following are the proportions of the ingredients used in an important bottle-making establishment in the neighbourhood of Lyons:—Rhone sand, 100 kilos.; sulphate of soda, 8 kilos.; carbonate of lime, 10 kilos.; powdered charcoal, 6 kilos. The sand imparts a clear-brown tint to the glass. Non-argillaceous sand is preferred. In most cases, 1·5 kilo. of bi-oxide of manganese is added to produce the reddish colour in the bottles affected by the growers in the South of France, which tint is due to the admixture of sesqui-oxide of iron with the oxide of manganese.

H. M. C.

DAMP DWELLINGS.

Part II.

Resuming this subject where we left it,*—namely, at the consideration of the materials for walls,—it will be obvious that, as all external walls are exposed to more or less wet weather, our efforts will be most usefully directed to preventing the moisture from entering at the outer face of the wall; or, if we cannot prevent its penetrating the surface, then we must apply ourselves to hindering its passage quite through the wall.

The use of materials which have a very hard face, such as the best sorts of building-stone or bricks, especially machine-made bricks, will, if the joints of the work are well "pointed," *i.e.*, filled with mortar, keep out the moisture effectually. The best class of cement used on the face of a wall does the same thing; and when bricks of a porous quality are of necessity used, it is often the best safeguard to "render" the walls with Portland cement. It is important to notice that not only the face but the top of every wall must be protected. It is to keep the wet from soaking into the body of the wall that every window has a sill of hard stone, or some other impervious material, and that all parapets or other unprotected walls require a coping; and the top surface of all cornices or chimney-caps, or even strings and other projections, is, in the best class of buildings, protected with lead or cement for the same purpose.

Where the materials are not naturally impervious, many attempts have been made to arrive at some mode of rendering them so. Professor Church, Messrs. Ransome, and recently Messrs. Gay, may be named as the most prominent among those who have proposed chemical means for accomplishing the induration of building materials with more or less success. It would be out of place as yet to try to fix the degree of success which has attended their efforts; whatever any or all of them may prove to have accomplished, no one of them has yet gained universal acceptance, or superseded the two applications in which practical masons have long put faith, viz., a wash of soap and alum and a coating of oil. Perhaps oil, when applied thoroughly and in dry weather, may be said to be as yet the only application which extensive experience

* See Vol. I., p. 528.

has pronounced successful, though the soap-and-alum wash has been frequently found useful.

If the surface is once passed, the thicker the wall, the longer it is in being thoroughly soaked, and the less wet will penetrate it from short rains; but almost the thickest solid wall will sooner or later give passage to continuous moisture, if its outer face be once penetrated; and experience has constantly shown that *a hollow wall* is drier than a solid wall of the same thickness. When building in stone, it is especially desirable to have an inner lining of brick, with a clear space of from two to four inches between it and the wall, and as few solid points of contact between the two as possible.

The employment of two materials—such as stone with a backing of brick, or soft brick with a facing of harder brick, or of flints, or even of rough-cast—often produces a tolerably dry wall, without much expenditure of hard material; and Taylor's facing-bricks, which are little more than tiles each with a ledge, but which can be employed to face a wall built of concrete with perfect success so far as dryness goes, are a good instance of the application of this principle; so are the tiles used in Sussex and some other counties to form the face of external timber framings; but in exposed situations, or with only ordinary or bad materials at command, hollow walls may be recommended as the best precaution hitherto invented. In some cases, contact between the outer and inner wall can be almost entirely prevented by connecting them together with iron cramps. When this is not done, the greatest care must be taken to reduce the points of connection to a minimum, to employ hard materials at those points, and even to break the continuity of the communication by leaving those bricks which are used as ties clear at both ends. It is almost needless to add that the cavity must be kept clear of mortar and rubbish. A less perfect mode of preventing annoyance from damp than by building hollow walls, but a favourite expedient, is to "batten" the inner face of the wall; that is to say, to place strips of wood against it, cover them with laths, and plaster on the lathing. By this means, the inner face next the room is usually preserved from the actual appearance of moisture; but as it is possible that the whole wall behind the battening, if solid, may be moist all the time, this is an inferior method to the hollow wall. For very exposed situations, or very porous materials, a combination of the two, *i.e.*, a hollow wall, battened in addition, is to be recommended.

Where moisture is at all likely to enter from the ground on which a house stands, it is most desirable to cut off the foot of

the wall from all communication with the upper part by a "damp course," composed either of slate laid in cement, or of some sort of asphalte or coal-tar, or of vitrified tiles made for the purpose; and this should go quite through the external walls (in damp soils it should be used also in internal walls), below the level of the lowest floor. Where earth comes against the walls to any extent, it is desirable to have either an open area, or what is called a "dry area," to prevent its actually touching the walls; and in wet soils an intercepting drain outside that area will also be of service.

In good buildings, it is often customary to cover the whole surface of the earth under all floors with a layer of concrete or asphalte or some other hard body; and this, no doubt, promotes the dryness of the building to a great extent. Solid floors, *i.e.*, floors of stone, tile, or brick, should always be laid on a pretty thick layer of concrete or dry rubbish, not direct on the earth.

The precautions which can be taken in building, in the first instance, point to what may be done in cases where a dwelling-house, actually erected, proves damp. Supposing that no unfair amount of water falls on any part of the walls,—a matter to which we shall return presently,—and that damp shows itself from ordinary rainfall, or from the ground, the precautions to take in the hope of curing the evil are the same which we have already indicated as preventives. If the circumstances permit it, a coating of Portland cement will more often than not keep out the effects of weather. Where this cannot be used throughout, it is often applied with good effect to chimney-stacks. These are much exposed, and often absorb much wet, and let it soak down. At any rate, the tops of all walls, cornices and chimneys can always be so protected. Where cement is inappropriate or inadmissible, as is often the case, the mortar-joints must all be looked to, and the "pointing," *i.e.*, filling up with mortar, or preferably with cement, put in thorough repair, so as to make the face of the wall as even as possible; and in many instances oiling, or otherwise indurating the whole face of the wall, may be tried in addition.

If these remedies are not successful, or not appropriate, as it is impossible to form a hollow in a wall already built, the only course left that can be applied to the wall itself with any promise of success is to batten the inner face as before described; but this is an affair that interferes so much with all the joinery and other internal fittings, that it is rarely practicable to carry out such a measure. Forming a dry area round the walls is frequently a serviceable remedy where the lower part of a house is damp, and draining the site is often of very great service. So, in many cases,

is the taking up the lowest floor, removing a foot or two of earth, covering the fresh surface with concrete and relaying the floor, leaving good ventilating channels for the air-space so formed.

A very fertile source of dampness is "drip." Even the small amount of rain-water falling on a window, and which, after draining down, finally drips from the window-sill, has a great tendency to render the wall immediately below that sill damp; for whenever the wind blows towards the wall, every drop is likely to be blown against its surface. This, by-the-bye, shows the folly of our making the wall immediately under window-sills thinner than elsewhere, which it is customary to do for convenience sake.

The drip from a roof not furnished with a gutter, or from a verandah that is too shallow, or, worst of all, from a defective rain-water pipe, is, however, larger in quantity and more exposed to wind than that from a simple window-sill; and this source of dampness often remains for a long time undetected, as the place where the water falls against the wall will often be distant from that where it escapes.

As a general rule, it may be laid down that there is no auxiliary so powerful in diminishing the amount of such moisture as cannot be actually shut out from any part of a building, as a free circulation of air. It is to be remembered that the atmosphere is almost always in such a state, that when it comes into contact with free moisture it will absorb some of it. Let, therefore, openings communicating with the cavities and vacant spaces of a house be freely provided. The hollow space in a roof, the space between floor and ceiling, and the hollow under a floor, should all enjoy a free circulation of air. It is even desirable, in building hollow walls, to attempt to promote a circulation of air in the cavity, and in all these cases it should be remembered that *two* openings are requisite to each hollow in order to give much hope of a current or change of air. Where there is no ventilation under the lowest floor of a house, the joists and timbers will soon begin to decay. This may be accelerated by covering the floor with oilcloth or kamptulicon or similar non-porous coverings. Ivy or creepers against external walls, and even trees growing close to them, tend to promote moisture by cutting off the circulation of air.

The failure of any portion of the arrangements for water-supply or drainage will be pretty sure to lead to damp. As general rules, no drain should ever be permitted to pass under any part of a dwelling-house; and when this cannot be prevented, the drain should be so laid, without being covered up with earth, that every part of it which is under the floor of the house can be reached at

once. The water pipes, on the other hand, should be kept well within the house for warmth's sake, and, where they leave it, should be at a level of not less than 3 ft. at the least below the surface, for protection against frost. Whenever practicable, water pipes should be left where they can be seen and got at. Iron is preferable to lead for their material, and the arrangements should always include the means of shutting off water-supplies in very frosty weather.

It only remains to suggest to those persons who unfortunately find themselves in a damp house which they cannot leave, that they ought to use as many remedies as they can, rather than only one at a time; that, as far as possible, what is done should be done in dry weather; and that the repairs or remedies attempted should be carried out with good materials and labour, in the most thorough way possible, and under vigilant supervision. Damp is most insidious, finds its way in at very small and very out-of-the way inlets, and when once established seems very loth to be disturbed. Those who build for themselves will, we hope, not overlook the very just importance of the simple precautions necessary to keep their houses dry; but we should be especially gratified if these observations induce some of our readers who rent houses to bestow some little pains in ascertaining, before they take a house, if these precautions have been attended to or not. It is wise to try to select a wet day for looking over a house, for if the day be fine, and the weather dry, damp spots as well as many other defects may be easily overlooked. Let the intending tenant look for the existence of damp-courses, dry-areas, and ventilation under floors; let him avoid a ground floor that is not a little raised above the earth outside, unless he is sure there is a good cavity under it well ventilated. Bricks that are manifestly porous, or which change colour very much when rain falls, parapets with no copings, walls where the pointing is not thoroughly sound, eaves without gutters, and the like, are to be looked upon with great distrust; and an unsound roof or ill-arranged gutters (of which, by-the-bye, few non-professional persons can form a good opinion) ought to be looked upon with as much disfavour as a dining-room of the wrong shape, or a drawing-room that looks gloomy. In one word, in choosing a house in which a man intends himself and his family to live, he should look out for the indications of damp as pointing out the presence of one of the most serious enemies to the comfort, if not to the continuance, of their life, which he can have to encounter.

T. Roger Smith.

THE SUPPLY OF FISH TO LONDON.

Gradually, and despite of prejudice, antiquated notions, and opposition, the supply of fish to the metropolis has been largely developed, and is now acquiring satisfactory proportions, though there is still scope for further development. During the year 1870 our monster town received a larger supply of fish than was ever previously known. Two main causes combined to produce this result—greater facilities for land carriage, and the operation of a fine large additional market, to which must be added the development of the Kinsale fisheries, a subject which was ably treated by a contributor to the March number of this Journal. Columbia Market was opened as a wholesale and retail fish-market on the 21st of February, 1870 (see *Food Journal* for April of that year), and during the twelvemonths ending on the 21st of February in the present year, the following enormous number of packages of fish has been sold there:—Prime fish, including turbot, soles, brill, etc., 13,759; plaice, haddock, etc., 25,885; cod, ling, etc., 1,810; mackerel, 6,502; sprats, 505; fresh herrings, 3,844; bloaters, 33,166; dry fish, 2,271; shell fish, 2,283; shrimps, 327; eels, sundries, etc., 482. Besides this, 210 boxes of prime salmon arrived, making in all nearly 100,000 barrels, pads, etc., or, as the fish-salesmen insist on spelling the word, peds. When the Bill now before Parliament, providing for a tramway from the Great Eastern terminus direct to the market, is obtained, this will have a very decided influence on a still larger supply; but as the matter already stands, the benefit thus conferred on the inhabitants of the metropolis generally, and of its densely populated north-eastern districts especially, is incalculable. Dean Swift's hackneyed remark about the man who makes two blades of grass grow where but one grew before, is surely applicable with as much force to those who develope the food supply of this vast omnivorous London of ours; and to Miss Burdett Coutts is specially due the gratitude of the poor and the friends of the poor; while those who have organised the Kinsale fisheries and the facilities for the rapid conveyance of fish, also merit our thanks.

It might naturally be thought that the increased supply of fish would have considerably lowered prices; but this has not been the case. We are apt to overlook the fact that, while demand creates supply, supply creates demand. The consumption of fish

has increased *pari passu* with its supply, and the consignors to Columbia Market state that they have received unusually good prices for what they have sent throughout the year—the Columbian year, if a parody on the Chancellor of the Exchequer's phrase may be permitted. The success of the market has had the effect of making the denizens of the neighbourhood for miles round more of a fish-eating population than they were. The wayfarer in any of the streets in this crowded locality will frequently be made cognisant of "an ancient and fish-like smell," an odour which is scarcely so agreeable as the "perfumes sweet from Araby the blest." A combination of odours more fishy than fish, and more oily than oil, proceeds from the operations of the "fryers," of whom perhaps a hundred have established themselves in the neighbourhood of the market, and who thus supply the working classes with nutritious and wholesome food to a hitherto unprecedented extent. When this market was opened there was a great prejudice against it on the part of the retail fishmongers in the vicinity—a prejudice which was natural enough; but the market is now chiefly wholesale, and not only has this prejudice subsided, but the retail fish-dealers within reach—and, in fact, throughout the metropolis—are now highly favourable to it. Visitors to the market may be inclined, perhaps, to doubt its complete success, when they observe several shops closed; but the fact is, that when Columbia Market was opened as a general market, the tenants received agreements to expire in June 1871, and some of these are acting the part of the dog in the manger, neither doing business themselves nor allowing others to do any, except at a high premium; but ere long these shops will be occupied by fishmongers. It is pleasing to be able to state that the market, as a whole, is a decided success, and that the experiment made by the benevolent lady referred to has proved a boon to all concerned, from the fisherman to the fish-consumer; and here it is but fair to add that much of this success is due to the hearty co-operation of the manager of the market, Mr. J. Sapsford.

The development of railway communication has also had much to do with the increased supply of fish to the metropolis, rapid conveyance being of course of the utmost importance. Before the era of railways, the supply of fish to London was miserably small and slow; but as railway communication has been extended, the land-carriage of fish has increased and the water-carriage has diminished. For example, in 1848, 10,442 vessels brought 108,739 tons of fish to the metropolis; but during the years 1867-8-9, the water-carriage had fallen off thus:—in the first year, 3,733 vessels,

60,420 tons; in the second, 3,462 vessels, 55,809 tons; in the third, 2,778 vessels, 47,717 tons. The carriage of fish by rail has, on the contrary, greatly increased; and, whatever interests may suffer by this, the country at large has been much benefited by it. The report of a committee of the London Corporation, dated Sept. 16, 1870, contains some valuable facts and evidence on this subject. Mr. Hewitt, the largest carrier of fish by water, says, "There are 200 smacks engaged at Yarmouth; some send by water, some by rail. I should think two-thirds send by rail, and one-third by water." Mr. Charles, a well-known fishmonger, and Mr. Sayer, also a large fish-salesman, gave evidence which shows how much the railway carriage has developed. The latter remarked, "I employed in 1867 twelve vessels to carry my fish, ten vessels in 1868, and eight vessels in 1869. All the vessels were about the same tonnage." Being asked whether the Great Western Railway fish traffic had not greatly increased, he replied, "I think it has; we paid them 300*l.* in one day." Several other salesmen gave similar testimony. One stated that he obtained fish by railway, all the year round, at the rate of nine parts out of ten; that nearly all the best salmon from Scotland and Ireland comes by rail (the Channel excepted, *ça va sans dire*); and that there are a hundred fishermen who fish for the rail to one who fishes for water-carriage. The managers of several railways moreover gave important evidence before this committee. The Great Northern manager said, "I should say this year (1870) would be the largest year we have had;" the Great Eastern fish traffic was said to be increasing; the South-Eastern was declared "about the average;" while the manager of the Great Western said, "It has been very large this year; in one day we ran five special trains for fish from Milford Haven to London."

The increased and increasing supply of fish to the metropolis has naturally given rise to propositions for developing our market accommodation. In some quarters the enlargement of Billingsgate is advocated, and even an outlay of 250,000*l.* is talked about; in others, the establishment of a fish-market in conjunction with the Metropolitan Meat Market, or at Farringdon Market, or in the Farringdon-road, is suggested; but about the only thing that is certain just now is that, sooner or later, better arrangements must be made for the reception and distribution of the food treasures of the sea. Columbia Market has effected much, and what has been done has been well done; but yet more requires to be accomplished.

J. M. Philp.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

LETTUCE DRESSING.

For a family of six, boil three eggs for ten minutes, throw them into cold water or a minute, peel off the shells, cut and mash them fine and mix with them two tablespoonfuls of melted butter or sweet oil, two teaspoonfuls of mustard prepared as for meats, a dash of pepper and a little salt. Cut the lettuce fine, pour over it vinegar and sprinkle sugar to taste, then mix with it the prepared egg. This dish is as appetising as it is nutritious and delightful.

SAUCE ROBART.

Beat and cut up two moderate-sized onions into small dices; put them in a stewpan with 1 oz. of butter; stir them over the fire till rather brown, then stir in a little flour; add a tablespoonful of common vinegar and half a pint of stout. Let it simmer ten minutes; skim well, then stir it over a sharp fire until reduced rather thick; add a little mustard, salt, and pepper.

FRITADELS.

Take any part of meat left of joints cooked before, one part fat and three lean; take away all skin; chop fine with some bits of bread which have been soaked in cold water, three parts bread and meat; add two raw eggs; chop with them a little onion, parsley, pepper and salt; fry them of a light-brown with very little at, or they will crack.

MANCHESTER PUDDING.

Stir 3 oz. of bread-crumbs with a pint of boiling milk, the yolk of two eggs, the white of one, and 2 oz. of butter beaten to a cream; sweeten to taste; line the dish with puff-paste, cover the bottom with preserves, pour the mixture into the dish; bake for an hour; beat the white of an egg to a stiff froth, and put it in the pudding just before it is drawn from the oven.

BARLEY CREAM.

Take a small quantity of pearl barley, boil it in milk and water till it is tender, then strain the liquor from it, put it into a quart of cream, and let it boil a little. Take the whites of five eggs and the yolk of one beaten with a spoonful of fine flour and two spoonfuls of orange-flower water; then take the cream off the fire, and mix the eggs by degrees and set it over the fire to thicken; sweeten to taste and serve when cold.—*Country Magazine*, 1736.

NOTES OF THE MONTH.

At a meeting of the Social Science Association, on March 6, Dr. Letheby read a paper on the legislation necessary to prevent Adulteration of Food and Drink. While admitting the value of the paper, we cannot in the least agree with the proposal of the author to allow of the mixing of certain articles, such as milk with water, butter with lard, coffee with chicory, so long as the nature of the mixture is explained to the purchaser. This is very well in theory, but in practice the purchaser would get as little of the explanation as he would of the genuine article; and the result would be that adulteration would be as rampant, if not more audacious, than ever. On this point the opinion of the meeting was as completely against Dr. Letheby, as it was against Mr. Muntz's Bill in its present form.

We wish every success to Mr. Dalrymple's Habitual Drunkards Bill. It is not intended to apply to those who are only occasionally overtaken, but to the broken-minded sot, who is unable to resist the temptation, and so has become a curse to himself as well as to society at large. The *modus operandi* proposed is to authorise the establishment of refuges or reformatories for habitual drunkards, in which they might be placed for periods not exceeding 96 days. They would be under medical supervision, and every effort would be made to strengthen the mind as well as the constitution.

The following is the amount of bad provisions condemned in Dublin during the year:—

Whole carcases.			lbs.
520	Oxen,	weighing	364,400
10	Calves	„	1,500
21	Sheep	„	2,100
55	Pigs	„	8,150
3	Goats	„	150
609			376,300

There were also condemned 9,339 lbs. of hams and bacon, 2,741 lbs. of fish, 2,677 lbs. of fruit, and 100 lbs. of vegetables; making a total loss to the community of 391,157 lbs. Contagious pleuro-pneumonia was the ordinary disease that affected the oxen, and the pigs were suffering from scarlet fever, popularly known as "soldier." This waste, not only in Dublin, but in all our large towns, is one of the most important subjects of the whole food question—for it is evident that the fines of even 10*l.* or 20*l.*, which the Dublin magistrates sometimes impose, are trifling compared with the profits made out of this nefarious practice.

We are glad to see that the law has been properly carried out at Chatham, and a good wholesome fine imposed on one John Parton, a grocer in High Street, for exposing for sale some bacon which was described as a mass of worms, and ticketed at 2½*d.* per lb. It shows to what dire straits some of our poor must be driven, when they can be induced to buy such carrion, and also how some shop-keepers in poor districts trade upon the necessities of their destitute fellow-creatures. Mr. Parton had to pay a fine of 18*l.* and 3*l.* 18*s.* costs, and we only wish that we could have seen him in the pillory as well.

OUR EXPERIMENTAL COLUMN.

A New Mustard.—We have often longed for an improvement in the matter of mustard, as there is probably no other article of regular consumption at our tables which is so variable. One day we have it thick and discoloured, and the next so thin as to run all over the plate. Then there is the French system of ready-made mustard, very nice in flavour, but to our insular ideas offensive in colour and deficient in pungency. In an admirable preparation called "Sinapine," however, Messrs. J. and J. Armistead, of Leeds, have succeeded in providing a ready-mixed mustard, combining at once the flavour of the Continental with the colour and pungency of the English article. This is, we think, a condiment which only requires to be tried to ensure constant use; and, taking into account the satisfactory nature of our analyst's report, we can safely recommend it on all grounds.

Yorkshire Relish.—For the same reason that the "swift dromedaries" increased the cost of Madame Rachel's "Dew of Sahara," so, we suppose, have the "Oriental condiments," &c., kept up the price of sauces to the orthodox shilling. But this absurd charge has been broken through in the case of the "Yorkshire Relish," of which we have received a sample. Although this excellent sauce only costs sixpence, it is in our idea quite equal in flavour to the best sauce we have tasted, while our analyst informs us that its ingredients are the usual condiments, well mixed, and free from any metallic impurity.

NOTICES OF BOOKS.

In a small pamphlet on "Elementary or National Education," Dr. Parkin advocates the introduction of industrial pursuits into our elementary schools, and shows very clearly that the old nursery rhyme, that "All work and no play makes Jack a dull boy," is even more applicable in the present day than it was fifty years ago. The education in practical life is fully as important as the culture of the mind, and the greatest number of the home miseries both of our well-to-do and our poorer classes arise from the utter neglect that is shown to this branch of education. "Know thyself" was intended by the Greek sage to apply quite as much to our bodily as to our mental economy.

"The Coffee Planter of Ceylon," by W. Sabonadière. It is astonishing what ignorance prevails amongst even well-educated people as to the production of our common articles of consumption. Although Mr. Sabonadière's book is intended more for the practical guidance of the planter, to whom it will prove most valuable, it contains much that is useful to the general reader. Coffee, like tea and sugar, is now represented by so much British capital, and involves so many important interests, that, in our opinion, some degree of knowledge on these subjects should be made an adjunct to all education; for such knowledge would be the first step to that practical acquaintance with our food which would be the truest safeguard against adulteration.

BOOKS RECEIVED.

The Tonic Treatment of Gout. By J. C. Dickinson. London: Baillière, Tindal, and Cox.

On the Comparative Mortality in Large Towns. By Dr. E. J. Syson. Read before the Manchester Statistical Society.

THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS ON THE ADULTERATION OF FOOD, ETC.—PART IX.

WE will turn our attention this month to the Consular Reports from the other hemisphere, and inquire into the modes in which the adulteration question is dealt with. Consul Munro encloses one of the regulations put forth by the Board of General Economical Administration at MONTE VIDEO, touching the sale of articles of food and drink:—

"The Committee of Public Health is hereby authorised to appoint Inspectors whose duty it will be to prevent the sale of any alimentary substance of whatever description, the condition of which, from its decomposition, adulteration, unripeness, or any other cause, may be prejudicial to the public health; it being the duty of the said Inspector to report all such infringements at once to the police, in order that the unsound article might be destroyed and a corresponding fine inflicted." The rules for the direction of Inspectors and Sub-Inspectors are exceedingly strict; and, if thoroughly respected, there could be no evasion of the laws, which in themselves are sufficiently comprehensive to meet the evil, even with their imperfect administration. But the everlasting scourge of civil war, requiring the constant military services of every denomination of citizen, soldier, and policeman, prevents any systematic carrying out of the laws, however well framed or well intentioned.

Mr. Consul Doyle states that at PERNAMBUCO the Municipal Chamber passed measures in 1849 providing against the adulteration of food and drink, by imposing fines and imprisonment upon guilty parties; and officers are employed by the municipality to see that these laws are properly carried out. But they are not actively enforced, and only partially meet the evil. The laws themselves are good enough, but when it is known that the agents of the local

governments, as also those of the general government, cannot possibly live upon the salaries granted them, it is not surprising that corruption should prevail, and that the laws are rendered nugatory. At Rio Grande de Norte (Vice-Consul Bolshaw) the legislative enactments are municipal, passed between 1842 and 1853. They prohibit the sale of adulterated food or drink, and any infraction of them is punished by loss of the articles exposed for sale, and by a fine or imprisonment for from three to eight days. For a repetition of the offence the punishment is doubled, but it is rarely that a vendor infringes the law twice.

At Panama, according to Consul Wilthew, the regulations which existed as to adulterations, before the Sovereignty of the States of the Republic was established, are no longer in force; but there is more care shown for the public health in the matter of meat. When dead meat is offered for sale, any person may denounce it if unfit for food. The *regidor*, or police officer of the district, then appoints two *peritos*, or experienced persons, who, upon oath, declare the meat to be either fit or unfit for food. In the latter case it is destroyed and the vendor fined.

Consul Miller writes that at Tahiti the laws in force are those of France, and that the local regulations give to the police the right of seizing unwholesome food or drink, as well as that of inspecting markets.

Consul Middleton encloses certain laws, dated 1864, which are in force in Caracas, State of Bolivar. The following is a brief summary of these laws:—The Councils and Commercial Boards are obliged to elect, every four months, a deputy for "provisioning," who is obliged to visit all establishments for the sale of food once at least in every month, or every time that he may be informed of the existence of false weights and measures, or adulterated and unwholesome food. In these visits he is accompanied by guards, the town doctor, or any two intelligent persons whom he may think fit to summon. Should he find any adulterations or unwholesome foods or liquors, he may order them at once to be thrown away; or, if he has too much dignity for this, "he shall note their number, weight, or measure, and without leaving the establishment shall circumstantially make known to the respective chief of the circuit his resolution, charging him with the execution of the measure which he in person could not carry into effect."

From Baghdad, and also from Beyrout (Consul-General Eldridge) similar reports are made, *viz.*, that no special laws exist in either place to prevent adulteration, but that offending parties are fined when a complaint is brought forward.

THE WATER THAT WE DRINK.

Part III.

We have considered the question of the merits of hard or soft water only as yet from an *economic* point of view. And regarding the very much smaller amount of soap required, the lessening of positive labour, and the general cleanliness in the working, we have unhesitatingly given our verdict in favour of soft water over hard. But this is not all. Indeed it is a small part, a very unimportant part, of this great question. We must scan this vast field of scientific discussion from other and more elevated points of view, if we would see it as we should see it in its entirety and integrity. And here I must remark that water serves many important physiological purposes. It may possibly be a real nutritive agent; but if not that, at any rate the part which it has to play in the work of life is one of primary importance. The blood ("the blood is the life") is kept in its constant and unwearied current by its fluidity. Organic particles, the builders up of solid tissues, are carried from one part of the body to another through its agency. Rob it of this fluidity, as seems actually to be the case in cholera, coma intervenes, and death results to a certainty. Give it this fluidity again, by injecting water into the veins, and an active, though temporary life, seems to return, inspiring hope to both patient and friends. During that terrible cholera visitation, a few years back, I repeatedly saw a young but most accomplished surgeon at our own hospitals inject a considerable quantity of water, in which some salts had been dissolved, into the veins of patients that were lying stretched out, seemingly lifeless, and in the course of a minute they would sit up in their beds and speak calmly and deliberately to their relations around them. The water gave the life. Alas! that it was so evanescent. It came, but it went. It went when fluidity went—

"The purple tide forgot its wonted play."

Then, again, digestion is only solution. We drink at dinner time, some requiring more for this purpose, and others less. Liquids, however, the larger part of which is water, have to be supplied to carry on the great process. The salivary glands pump their watery secretion on the food. The glands of the stomach, intestines, and pancreas, pump theirs also, and the liver is not behindhand in the work. True, it is not merely water in the several cases which I have cited that does the work. The active

principles of the saliva, pancreas, stomach and liver are distinct chemical bodies. But what I mean is, that water is the great agent that brings these several principles into *immediate contact* (one of the necessary conditions for the exertion of the chemical force) with the different kinds of food, and in the different parts which nature has designed. There can be no doubt, then, that the question of water and its relation to health and disease is a great medical question that can only be fairly and properly treated by medical men. The chemist oversteps his mark when he attempts to deal with a subject outside his profession. And it is this meddling that has led to many a doubtful act of legislation, and the bold assertion of principles that before long will prove, if they have not already proved, a source of trouble and annoyance.

Now, it is a well-known fact that beers brewed in certain localities are better than others; I could name places where it would be impossible to brew first-class ale. The same man with the same materials and the same machines could not brew Burton ale away from the Burton well. "It's the water as does it," as a certain familiar philosopher remarked respecting the seasoning. The reason, I admit, is not altogether clear and transparent; but there is one circumstance, at any rate, that largely influences results, and that is the extraordinary hardness of the water. Everybody at all practically acquainted with brewing knows that a water containing a large quantity of sulphate of lime and earthy carbonates, without much organic matter, is needful for a successful brew. I do not mean to say that there are not other peculiarities in the water besides the hardness that contribute largely to the success of the operation. I do not think these peculiarities are as yet very well understood. A consulting brewer, with whom I am acquainted, informs me that he has tried a large number of experiments in a neighbourhood where the water is very soft, of adding sulphate of lime to it with not quite the good results which he anticipated—that is to say, that a water artificially hardened scarcely possesses the same qualities in so marked a degree as one naturally so. At the same time, by this method of doctoring, a bad water may be considerably improved. I may just mention here that the well water used at the brewery of Messrs. Bass and Co. contains 54·5 grains of sulphate of lime per gallon; at Messrs. Allsopp's, 29·0 grains of lime and magnesian sulphates, and upwards of 17·0 grains of earthy carbonates.

Again—it is a very great question whether what is true respecting hard water in the extensive operation of brewing beer, is not also true in the smaller operation of brewing tea. There can be no doubt

that *soft* water extracts the *colouring matters* of tea. It makes it look stronger, and this suits the fancies, doubtless, of a people that love appearance and outside show. But the true tea lover soon discovers that the beautiful flavour of the tea leaf is obtained far more perfectly, when a somewhat hard water is used for its preparation, than when a soft water is employed. Coarse forms of extractive matter, marked by a very bitter taste, are in this way obtained from tea, which have the power of entirely destroying the aromatic principle, that delicate flavouring, with which consumers are so familiar. It is, however, true that too hard a water is as great a misfortune as too soft an one. There can be no doubt that our London waters are perfect for tea making. This was a subject of Government enquiry in 1851. The Commissioners reported that our London water of about 5 degs. of hardness, after boiling, made as strong tea as water of 2·5 degs., the flavour being superior in the former case, because, with the softer water, a slightly increased bitterness was detectable, owing to the solution of some of the bitter principles not dissolved by the harder one; and this shows us that the practice adopted by some frugal ladies of adding "just a pinch" of carbonate of soda to the tea, originates from a mistaken notion that depth of colour and beauty of flavour are synonymous terms. It is true that carbonate of soda makes the tea dark, but if you care for taste and flavour, I should strongly advise banishing the carbonate of soda bottle from the tea-table. There is one point to be remembered, and that is, that the brewing process with a hard water is a rather more tedious one. Using three samples of water, one of 2·0, another of 5·0, and a third of 8·0 degrees of hardness, and after boiling and experimenting in each case with the same quality of tea, I should say that five minutes was long enough, in the first experiment with the soft water, for the tea "to draw," whilst at least a quarter of an hour is necessary with that of 8·0 degs., and about 10 minutes with that of 5·0 degs. The tea made with the harder water is not so good looking, but is undoubtedly better flavoured. "We may conclude," says Dr. Letheby, in his admirable lectures "On Food," "that water of from 4 to 7 degs. of hardness, after being boiled, is best suited for infusions of tea and coffee, for such water dissolves the aromatic and physiological constituents, without extracting the disagreeable bitter principles." It is a matter, too, of some interest, to inquire whether in the cases constantly occurring in practice, where patients complain of tea producing a long train of disagreeable symptoms, these might not have been partially, if not entirely avoided, by employing a harder water in its preparation, and in this way avoiding the solution of these bitter extractive matters

to which I have referred; at any rate, I am convinced that such was the case in a patient who consulted me a short time back. She informed me that a cup of tea completely upset her. I advised the use of an artificially hardened water, and from that day to this no disagreeable symptoms have resulted. The only unfortunate circumstance is, that the question of a hard or soft water is not quite under our own control.

There is still another matter worth a moment's consideration, and one, moreover, not altogether unimportant, and that is the simple question of taste, which in soft water is disagreeable; only compare, for instance, our fine, bright, clear, though somewhat hard London waters with the unpleasant looking, and no less unpleasant tasted, soft waters of Aberdeen. Having lived several months far north, I am able to speak from experience in this matter. The Aberdeen water, in common with all soft water, is mawkish and unpleasant. It fails to refresh you; and what is somewhat curious, though undoubtedly true, it seems to fail in alleviating thirst. If anybody wishes to test this for himself, let him drink a glass of distilled water, and I am sure that he will only be too ready to admit how glad he is to return once more to the somewhat hard water with which we in London are blessed.

I pass on now to examine this question from another point of view. We have regarded it from an economic and from a dietetic aspect; we have still left the great sanitary question, whether hard or soft water is the more wholesome? The limits of this paper entirely prevent my discussing this subject at all fully, and I must therefore content myself with merely stating a few facts, and leaving the readers of this *Journal* to draw their own conclusions from them. A most important table has been drawn up and presented as evidence before a Parliamentary Committee, giving in detail the mortality of various towns and places, and distinguishing between those supplied with water above and below 10·0 degs. of hardness.

Twenty-seven places are enumerated in the table, and this is the conclusion:—The towns where the water is *over* 10·0 degs. of hardness (the average being 14·9) have a mortality equal to about 22·2 per 1,000 of the population. But in those towns where the water is *under* 10·0 degs. of hardness (the average being 4·9), then the mortality rises as high as 26·1 per 1,000 of the population. These facts would prove that, from a sanitary point of view, hard water is preferable to soft.

C. Meymott Tidy, M.B.

(to be continued.)

THE ELEPHANT APPLE.

It is a great pity that we cannot in this country participate more freely in the bountiful provision of fruit with which nature has blessed our Eastern possessions. The most luscious, delicious, and, I may add, wholesome fruits are being wasted, which, if they could be utilised, preserved, and brought to England, would not only find a ready sale, but afford a nutritious addition to our not overstocked larders and store-cupboards. It has always been alleged that the time necessary for the voyage was too long to keep such fruit fresh; but now that the Suez Canal has shortened the distance so considerably, this difficulty surely has been got over; and I trust that such valuable fruit as the banana, for instance, will shortly be sold at a considerable reduction on its present price in Covent Garden, and that many other tropical delicacies will not be left to wither on their stems, and literally "waste their sweetness on the desert air." There is one fruit which, it seems to me, would particularly repay any attempt to utilise, and that is the Elephant or Wood Apple of Bengal. By the kindness of an Indian friend, I have not only a specimen of the fruit, but also of a preserve made from it. The fruit is about the size of a large English apple, with a very hard woody rind, of a light grey colour, and it grows upon a tree 50 or 60 feet high. Under the rind is a fleshy pulp, of a sweet and pleasant flavour, in which are immersed the seeds. From this pulp is made a jelly, in appearance something like black currant jelly, and, while not unlike it in taste, it is altogether of a softer and—if I may use the term applied to a jam—a more buttery taste. As a preserve for the table, it is of the highest character, and keeps remarkably well. I am told that it is as easily made as our own apple jam. There is no reason, therefore, why it should not be brought into the market in large quantities, when attention is drawn to it, which I sincerely hope may be the case. I should perhaps add, that anyone who would systematically take this matter up would find other and remunerative products yielded by the *Feronia elephantum*. The wood of the tree is hard, white, and fine-grained, and would answer well for ornamental carving. Gum, resembling the best gum arabic, freely exudes from punctures made in the stem. Both the gum and the leaves have medicinal properties; the latter yielding a fragrant smell like "anise" when bruised.

Anne Isabella Larkins.

ORIENTAL DIET.

That small modicum of rice, which serves for the food of full-grown men in India and other parts of Asia, has always been a matter of curiosity to us of the West, who are accustomed to credit our beef and mutton with a large amount of our superior energy and progress.

The labouring classes in China, a country which, in some parts and during certain seasons, suffers as much cold as England, also depend mainly upon rice for their nourishment; and, as the habits and capabilities of the Chinese are very different from those of the natives of India, their dietary deserves special consideration. M. Paul Champion, a French chemist, who visited China for scientific purposes, gives in his work on the "Industries of China," produced in collaboration with M. Stanislas Julien, professor of Chinese in the College of France, some important information on the diet of Chinese workmen in various districts of the empire, which, taken in connection with the hours which they labour and other circumstances, give rise to serious considerations respecting the relative values of food.

Han-Keou, in the province of Houpé, is one of the great silk-producing places, and the weavers are amongst the best paid and best fed workmen in China. These weavers work generally from six in the morning to six at night; and in these twelve hours they can weave a piece of silk from 3 ft. to 4 ft. long, and 24 in. wide; they receive about 8*d.* a day of our money, in addition to lodging and nourishment. Their food consists principally of vegetables, with pork once a week, fish eight times a month, and sometimes fowl once a fortnight; that is to say, at the beginning and in the middle of each month, when the fête days of the Chinese occur. In general, rice is the basis of the food of the Chinese, who consume about fifty pounds per month, the cost being about 4*s.* or rather more. If to this be added ten catties of fish (the catty being equal to about 1⅓ lb. English), at about 2*s.* 6*d.*; eight catties of pork, at 11*d.* a pound; two fowls, weighing three catties each, at about 7*d.* a catty; and, say, 2*s.* 6*d.* worth of vegetables,—we have the usual monthly consumption of a Chinese silk-weaver. The employers calculate the cost of each man's diet in rice and vegetables alone at about 4*d.* a day; and the whole, including tea and tobacco to the amount of about 1½*d.*, at a little more than 10*d.* These weavers have three

meals a day; in the morning at eight o'clock, in the afternoon at two, and at about seven in the evening, when work is finished.

The masons and bricklayers of the same province receive only 5*d.* or 6*d.* a day wages, besides two meals during ordinary weather, and three in the times of great heat, the cost of the nourishment being about 10*s.* a month per man. The food consumed by each workman in a month consists generally of one catty of pork, half at the beginning and half in the middle of each month; half a catty of fresh fish every fifth day; thirty catties of vegetables, chiefly cabbage and salad; and forty-five catties of dry rice. In summer the men work from six to six, and in winter from sunrise to dusk. During the greater part of the year the workmen have but two meals a day,—at eight o'clock in the morning, and three in the afternoon,—half an hour being allowed for each meal; but when the weather is very hot, the men have three meals during the day, the quantity of rice being diminished, and the vegetables, which are much cheaper, being increased in proportion.

M. Champion collected a good deal of information relative to the wages and food of bricklayers, masons, joiners, and labourers, employed in the construction of the church of the Lazarists and other buildings at Pekin. The men are only able to work at the above callings during eight months of the year, on account of the excessive cold, which often reaches 5 deg. Fahr. The hours of effective labour do not exceed eight and a half or nine hours per day; the men are employed from six to six, but they are allowed two hours and three quarters for their three meals, besides a rest in addition of three quarters of an hour for tea and a pipe. The following is the general composition of their meals:—In the morning, a pound or rather more of Indian corn bread with two or three ounces of haricot beans, sweetened by being allowed to germinate, and eaten uncooked with a little water and salt; at midday, two or three loaves of wheaten bread of very fair quality, weighing about a pound and a half each, with haricots as before, or, in place of them, certain herbs cooked with salt; the third meal consists of a bowl of boiled millet and salted herbs, as above. In addition to the regular diet, each man has a right to half a pound of pork on the 1st and 15th of each month. It will be seen by the above statement that, in the north of China, rice is replaced by bread.

At Shanghai the workmen consume on an average daily a catty of rice, costing 3*d.*; cabbage or other vegetables, of which the cost is less than a 1*d.*; and about a third of a pound or less of dried fish, with the usual allowance of pork twice a month. The wages are equal to about 5*d.* a day.

The usual food of the working-classes of Kiang-si, one of the poorest districts, is given at about two pounds and a half of rice per head, with some vegetables and fresh or dried fish, and the fortnightly pork; the cost of the rice is about 1½*d.* per lb. The wages of these men are about 6*d.* per day, and their keep costs the employer 3*d.* or 4*d.* in addition. M. Champion gives, from personal observation of some days, the diet of the poor sailors of Kin-te-Tchin, the seat of the famous porcelain works, which consists solely of rice plainly boiled in water, cabbage boiled with the addition of a little fat, and sometimes small fish boiled and eaten with salted turnips, which are described as very indigestible, but rather less insipid than the rest of the food.

The Shanghai troops are under the direction of a French officer, and are said to be much better cared for than those of any other part of the empire; they receive a monthly allowance equal to 29*s.*, and they expend 5*d.* a day, at the utmost, for their food, which consists of about a pound and a half of rice, cabbage, oleaginous peas, a little pimento, and the usual monthly pound of flesh.

As the workmen employed in the preparation of tea at Kiu-Kiang, and other places, rank high in intelligence, and have to employ a considerable amount of force, their nourishment is comparatively abundant; each man consumes about a catty of rice a day, four or five ounces of fish per week, and one pound of pork monthly; they are allowed also rather less than ½*d.* a day for wine and tobacco. This "wine" is simply weak spirit distilled from rice or sorgho, and drunk hot; wine proper is almost unknown. The country produces magnificent grapes, the finest in the world according to some French writers, but one of the Emperors, who reigned long since, prohibited the making of wine on hygienic grounds, and, in spite of the promptings of the Jesuits and other foreigners, the practice has never been renewed. The tea-dressers work from five o'clock in the morning to five in the evening in summer, and from half-past seven to five o'clock in winter.

G. W. Yapp.

[to be continued.]

Artificial Colouring of Coffee.—The analysis of a green powder sold to coffee dealers, for the purpose of giving the berries a handsome greenish tint, yielded the following result:—Prussian blue, 15 parts; chromate of lead, 35 parts; gypsum clay, etc., 35 parts; water and other fluids, 15 parts. To detect this, it is simply necessary to take a quantity of the berries in a white handkerchief and apply friction, when the colour will appear on the handkerchief.—*Anglo-American Times.*

PUBLIC HEALTH.

Part XIII.—Sanitary Supervision (Local).

I shall bring this series of papers on our sanitary organisation to a close with a very brief notice of local health authorities, those worthy Town Councillors, Boards of Guardians, and Vestries, who are *permitted* by Act of Parliament to do so much, but who generally do so little for the health of the districts or towns over which they are set. So rarely, indeed, in some parts of England do guardians of the public health appear in this capacity, that many persons would be startled to find that it was anyone's business to insist on their being vaccinated, for instance; to prevent them from mingling with their fellows when suffering from scarlatina or other infection; to prevent them from using a public conveyance under the same circumstances, or creating a nuisance by noxious trade, &c.; to seize upon unwholesome meat, or to insist on proper drainage and some approach to cleanliness around, if not within, their dwellings. England is indeed a free country, and so long as a man does not hurt his neighbour sufficiently to make him cry out, little notice is taken of what he thinks or does. Tradesmen may adulterate to their heart's content, and, provided their customers do not complain too loudly, they need fear no ill; children may be sent to school with the scales of scarlet fever hanging from their skin, and there is often no one to interfere; indeed I have heard of a public officer in a large town proclaiming (on his own responsibility, be it hoped) that "*tina*" (meaning mild scarlet fever) was not catching, and that it was absurd to keep children suffering from so trivial a complaint away from the parochial and national schools.

I would ask my readers whether they know who is in authority over *their* health? Not as individuals, for that devolves on their private medical attendant. I refer here to their health as members of a social community. What is the local board, sewer authority, or nuisance authority under which they live?

Few, I think, could answer correctly. So involved is legislation on these points, so various are the authorities in kind, so infinitely varied are their duties, that it requires an intimate acquaintance with sanitary acts to unravel the legal tangle. I cannot promise more on the present occasion than the merest sketch, hoping,

however, to return to the subject at some future time, when the Report just published by the Royal Sanitary Commission shall have borne fruit in a simplified and condensed code of health legislation.

Attention has already been drawn to the piecemeal nature of our present sanitary law. Act after Act has been passed, dealing now with sewage, now with public health generally, now with the prevention of disease, now with the removal of nuisance, and each group of Acts designating a new authority, nominally at least, for carrying out their particular purposes. The Local Government Acts, for instance, name a *Local Board* as the administrative authority. The Nuisance Removal Acts designate either such a board, or, in rural districts, the Board of Guardians, and they are termed indifferently *Local Authorities* or *Nuisance Authorities*. The Sewage Utilization Acts, and the first part of the Sanitary Acts, 1866, which might extend where there was no local board, named Town Councils, Improvement Commissioners, Local Boards or Vestries, under the title of *Sewer Authorities*.

The Diseases Prevention Acts, again, name the Guardians; and where they do not exist, the Overseers of the Poor as the "*Local Authorities*, for their exemption under the supervision of the Privy Council, who are empowered to direct the *Nuisance Authority* (not being Guardians or overseers) to act."* There are, lastly, towns with special Acts of their own bearing on the public health, the provisions of which may conflict with those of the general Acts and with the general law of the land. What wonder if authorities themselves are ignorant of the extent of their jurisdiction, and that Boards of Guardians, for instance, "seldom seem aware that the removal of nuisances in country places is entrusted to them, and vestries are generally unconscious of most important sanitary duties resting on them."† Authorities may clash in almost every town or country district, and it would puzzle even a lawyer at times to name the authority to which application should be made for the remedy of a given sanitary want.

What local government in health matters comprises, may be learned from the following summary given in the Report of the Sanitary Commission :—

"The supply of wholesome and sufficient water for drinking and washing.

"The prevention of the pollution of water.

"The provision of sewerage and utilisation of sewage.

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* Report Royal Sanitary Commission. † Ibid., p. 21.

"The regulation of streets, highways, and new buildings.

"The healthiness of dwellings.

"The removal of nuisances and refuse, and consumption of smoke.

"The inspection of food.

"The suppression of causes of disease, and regulations in case of epidemics.

"The provision for the burial of the dead without injury to the living.

"The regulation of markets, etc., public lighting of towns, etc.

"The registration of death and sickness."

The authorities for carrying out many of these provisions have already been indicated in the preceding chapters; as regards others, no satisfactory rules could be given in any reasonable compass. We can only hope that effect will in time be given to Resolution 5 of the Royal Sanitary Commission, "that there should be one local authority for all public health purposes in every place, so that no area should be without such authority, or have more than one." Much will then have been done to simplify health legislation, to facilitate direct action, and to insure that immediate responsibility to a higher power which is so essential to energetic action and fulfilment of duty.

But whatever may be the nature of the local authority, whether Town Council, Commissioners, Guardians, Local Board, or Vestry, whether Sewer authority, Nuisance authority, or Local Board, they can effect little of a useful nature without skilled advice on those matters with which they are necessarily unacquainted. The Royal Sanitary Commission therefore most wisely insists (Resolution 20) on the appointment of at least one medical Officer of Health for every local health authority.

The want of such officers under the present *régime* is often sorely felt, but nothing short of a compulsory clause in an Act of Parliament can insure their general appointment. The reasons urged against them are serious and sometimes comical. Expense we can understand; but what can be said of Town Commissioners in a fashionable watering place, who decided against an officer of health on the ground that his appointment would frighten a fickle and fashionable public, and induce them to search for health and pleasure where disease is allowed free course, and sickness is never named?

The number of medical officers of health in England at any one time is difficult to determine; so many are elected for limited periods, to tide over an epidemic or other temporary difficulties.

There are, I believe, forty-seven for the metropolis, and Dr. Stewart found in 1865 that of 570 places under the Local Government Act of 1858, and the Public Health Act, 1848, with populations varying from 214 to 200,000, only 92 had appointed these very necessary officials; whilst no less than 111 towns whose population varied from 20,000 to 200,000, had no officers of health at all.*

The salaries paid to these able and responsible advisers were in some cases simply contemptible. "Not less than eight out of the forty-seven highly-educated gentlemen receive 50*l.* of annual salary for discharging the duties of the highest sanitary office under the local boards of this great metropolis," says Dr. Stewart†; and some recent appointments might be noticed in terms equally severe. If we consider the precarious tenor under which the health officers retain their posts, it will be matter of surprise that they have been enabled to do so much. In London their strength has been found in union and mutual support. The Metropolitan Association of Medical Officers of Health has ever shown itself forward in sanitary work; it made a great and successful effort in 1858 to register disease, and the papers discussed at its meetings are of the highest interest. In provincial towns, the health officers being unable to unite, have had to do battle for the most part single-handed against ignorance, prejudice, and false notions of economy, not only in the public, but in the authorities themselves. All honour to those who have won for themselves a name under circumstances so inauspicious. One has only to read such a paper as "Four Years' Experience of a Health Officer," by Mr. Davis, of Bristol,‡ to appreciate at once the difficulties to be contended with, and the consummate skill and patience with which in that and other instances they have been overcome. The duties of the health officer embrace everything connected with the public health—as regards disease preventive rather than curative; and seeing that they involve inquiry, if not a mild system of *espionnage*, it may readily be imagined that the officers who perform them are not always in the best of favour with the public.

The health officer of the future will probably be synonymous in country places with the Poor-Law Medical Officer of the district, whose public health functions at present are confined, with some exceptions, to carrying out the provisions of Acts for the prevention of disease.

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* "Medical and Legal Aspects of Sanitary Reform," by Alex. P. Stewart, M.D. Pamphlet. 1865. † Ibid., p. 23.

‡ *British Medical Journal*, Nov. 13, 1869.

Recent legislation in the Workshops Regulation Act of 1867 has added yet another local officer, with duties closely allied to those of the Inspector of Factories, which we have already considered. Receiving his appointment from the local health authority, the Inspector under this Act interferes between labour and capital, in the interests more especially of the young. To quote Mr. Baker's words* :—

"The law, with certain modifications, will limit the labour of young persons of both sexes, between thirteen and eighteen years of age, and of women of any age. Manual labour, by way of trade or for gain, is forbidden to every child under eight years of age, and after the 1st of July, 1870, to every child between eight and thirteen years old, unless it goes to school for ten hours a week—education and labour shall go hand in hand." Protection is thus afforded where it is most required, and advantage is taken of a sanitary Act to promote the intellectual no less than the physical well-being of the young among the labouring classes.

In now concluding what I am aware is but a feeble and most inadequate outline of the great field of Public Health, I would earnestly commend the subject to all who value personal comfort and health, social well-being, and national greatness, for with all these it is closely connected. The publication of the Report of the Royal Sanitary Commission marks an era in the history of Public Health matters in England, and it is of the utmost importance that its various suggestions should be discussed and weighed while there is yet time. The evidence also on which it is founded forms a rich mine which should be carefully worked by all who take an interest in the sanitary legislation of the future. It is a subject which affects us as individuals; it demands our best attention, and there is no one, however humble, however exalted in rank, who cannot, either by personal example, influence, or authority, contribute something towards that "general good" which Darwin so well describes as "the means by which the greatest possible number of individuals can be reared in full vigour and health, with all their faculties perfect, under the conditions to which they are exposed."

E. T. Wilson, M.B.

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* The Workshops Regulation Act, 1867, made as Easy as Possible for the use of Masters, Workpeople, and Parents. By Robert Baker. London, 1867.

SOME FACTS ABOUT TOBACCO.

Whatever may be its full significance, it is a fact beyond dispute, that in the staples of civilized life, Tobacco ranks fourth, and it is, perhaps, a question whether it should not be classed immediately after bread, as its relative consumption now probably exceeds proportionately that of meat and beer. In 1801 the number of dealers in tobacco in Great Britain was 83,493; this rose in 1833 to 167,785, having about doubled in thirty years; and in 1841 the otal was 185,131, and it is clearly within the mark to assume that at present more than a quarter of a million of persons are engaged in the retail tobacco trade, while so long back as 1853 the whole amount consumed was the product of more than five millions of acres of rich land. The representative tobacco-plant is the Virginian, growing to the height of, perhaps, six feet. The stem is slender; the blossoms form a coronal, and the rather limp, spatula-shaped leaves are sessile. A common variety, the *green* tobacco, is cultivated in Ireland under the deceptive titles of *Oronooko* and *Negrohead*. No plant has so wide a geographical range; and fiscal reasons alone have prevented its extensive culture in Great Britain. This, however, is hardly regrettable, for tobacco exhausts the soil *fourteen* times as much as wheat, carrying off in what will make a ton of dried leaves, no less than 500 cwt. of fertilizing matter, while it takes 14 tons of wheat to effect as much. In Europe, indeed, it is not unlikely to work those baneful effects which are already exhibited in extensive tracts of worn out, waste lands in America. In Hungary, Germany, and lately in France it has formed already an important product, and, as almost a food-staple, now figures historically in the heavy cigar requisitions recently levied on every conquered town of France, which were doubtless regarded by the unlucky inhabitants as conclusive proofs that their highly-educated invaders did not permit even campaigning wholly to interrupt their metaphysical inquiries. Humanity, indeed, seems to have a strong proclivity towards all sensuous indulgences that produce a soothing sensation, a restful languor. A recent traveller in the South of Russia remarked, that it is a general practice there to dry the seeds of the sunflower, and collect a store of them against winter, when the idle peasant passes many vacuous

hours macerating the seeds in his mouth. No doubt tobacco will be highly appreciated by him when he reaches a further stage of civilisation. The consumption of tobacco, indeed, exhibits an unparalled rapidity of increase and extension. In 1689, the United Kingdom received 120,000 lbs. of tobacco, and it is questionable whether even that amount was actually smoked; in 1857, suppressing intermediate returns, the amount had risen to very nearly 33,000,000 lbs.; and in 1865, even this enormous total had *doubled*, being 66,000,000 lbs.—an increase far in excess of that of population; and political economists may dwell thoughtfully on the fact that England now spends about as much per diem for tobacco as she does for bread! Such has been the marvellous diffusion of what facts compel us to recognise as a prime staple of ordinary life.

After manufacture, tobacco is undistinguishable from the dock except through the microscope. The principal constituents of tobacco are nicotine, gum, malic acid, salt, woody fibre, and four-fifths of water. As an antiseptic, tobacco is well known and justly valued; but its essential properties are virulent, and it is a popular fallacy to suppose that *all* these are dissipated, or neutralised in the process of combustion. Analysis of the *smoke* proves the contrary; and the senseless feat sometimes exhibited by ardent smokers of swallowing and afterwards ejecting the volume of an energetic "draw," cannot be often practised with impunity. No surface of the human body is so prompt and extensive an absorbent as the pulmonary membrane. One surgical anecdote will illustrate this well. The famous surgeon, Dessault, had a case where the trachea and œsophagus were severed. The patient was sustained through a feeding tube. One day this was accidentally placed in the trachea down to the division of the bronchi, and some soup thrown into the lungs before the error was detected; yet nothing dangerous resulted, rapid absorption having disposed of the liquid at once. Hence, indeed, the startling energy of such a poison as prussic acid when brought into contact with the pulmonary surface. On this account frequent expectoration is a great safeguard, as much of the fatal nicotine, which would otherwise be absorbed into the system, is thereby ejected. Careful smokers, wishing to enhance their enjoyment, should use clean pipes of very porous clay, and avoid swallowing either saliva or smoke. Although the special names of manufactured tobacco are multitudinous, all kinds are referable to one or other of the following:—First, when the leaves are shredded; these constitute every sort of cut tobacco. Secondly, when the leaves are spun or twisted; these are used for

every kind of roll tobacco. Thirdly, when the stripped leaves are folded one over the other; these form cigars. Fourthly, when the leaves are pulverised, they constitute snuff. The tobacco composing cigars should be identical with that composing cheroots. There is no difference necessarily. They differ in form alone: the cigar being spindle-like and the cheroot conoidal. It does not appear that tobacco is much adulterated. The Chinese, indeed, are accused of employing arsenic in manufacturing mosquito tobacco; but in England the famous *Lancet* Commission of 1851–established that tobacco was, on the whole, very free from adulteration, except in the harmless, and probably to most people, the unlikely form of sugar.

Civilized man borrows little from barbarous man, but it would appear as if in adopting from the American aborigines the use of tobacco, the European had, indeed, determined to "better the instruction." A map of its distribution gives to tobacco, beginning west, Brazil,* Mexico, the United States, North Africa, Portugal and Spain, France, Great Britain, the Netherlands, Scandinavia, Germany, Turkey, India, China, and Australia; a goodly heritage. Although some ancient Chinese sculptures and suppositious tobacco pipes in British tumuli have been adduced as evidence of the antiquity† of smoking in the old world, it is certain that Europe first received tobacco from America, and invented the pipe as a civilized and scientific refinement upon the cigar, the clumsy contrivance of the savage. This, indeed, is curious, showing the utterly uncertain foundation of fashion, when we remember how many persons tolerate *cigars*, while deeming pipes exceedingly vulgar. In the century of its introduction into Europe, pipes were the *only* fashionable mediums for consuming the new luxury; and being made on the calumet scale, one pipe, fully charged, was passed round to regale half-a-dozen‡ Elizabethan worthies. The *form* of the pipe is of some hygienic importance. Turkish and Indian water-pipes filter the smoke most beneficially; a *long* stem also possesses a similar advantage, and it should be remembered that the faster the leaf burns, the more rapidly is the *empyreumatic* oil§

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* In South America, especially in Peru, the Coca is the substitute.

† China may be an exception. The plant furnishing the Celestials with a benign nepenthe is, however, quite distinct from the American species.

‡ Good authority informs us that in the reign of James I., some of the gentry spent the immense sum, for those times, of 300*l.* or 400*l.* per annum upon tobacco.

§ Supposed to be the fatal "juice" described in Hamlet, act i., scene 5, and actually used by the Comte de Bocarmé, at Mons, to poison his brother-in-law.

produced, and this, when swallowed to any great extent, impairs the health of the strongest.

Corn and cotton excepted, tobacco stands first in commercial importance. About 1858, nearly 6,000,000 of acres were devoted to tobacco culture; the average crop being some 800 lbs. per acre, which at an uniform rate of only 2*d.* per lb., yielded a gross value of 37,000,000*l.*! The hop, on the contrary, which is a most representative English plant, according to the distich, which says that

> Hops, Reformation, bays, and beer,
> Came into England in one year,

and worth *six* times as much as tobacco per pound, only yielded a value of 4,000,000*l.*

Smoking is so evidently on the increase that it is highly desirable to dispel all ignorance upon the subject, and so far popularize all essential facts peculiar to tobacco, as to reduce such of its effects as are injurious to the human organism to a minimum. Long known as a prophylactic, the dreadful war on the Continent has revealed in tobacco a quality which renders it a very fair apology for an anæsthetic. The soothing cigar has come to be the natural sequence to the cruel knife in army surgery, and it is now notorious that the ex-Emperor of the French derived no small part of his political safety previous to the war, from the simple circumstance that he carefully supplied the army with large allowances of good tobacco; a privilege that was highly appreciated. But we need not this, nor the expulsion from Madrid of a Spanish sovereign for merely altering the cut of the national cloak, to teach us the occasional importance of trifles in even imperial affairs.

Finally, the following anecdote confirms the truth of the physiologist's assertion that persistent indulgence in inordinate smoking results in the absorption of the actual essence of tobacco into the very tissues. Captain Wilkes, in an exploring expedition, interrogated a native of the Fiji Islands as to the fate of the crew of a vessel whose shattered hull still lay upon the beech. "All kill," replied the savage. "What did you do with them?" asked Captain Wilkes. "Eat 'em. Good," returned the cannibal. "Did you eat them all?" inquired the half-sick captain. "All but one," holding up a finger. "And why did you spare one?" "Cause him taste *too like tobacco;* couldn't eat him no how."

Percy Russell.

THE CONDITION OF THE PRODUCING CLASSES IN AMERICA.

From the day when the first Pilgrims landed on the Rock of Plymouth until within the past few years, little was known by Englishmen either of America or of the American people. The unfortunate Civil War has, however, removed most of the culpable ignorance that existed, and created a newly-born interest in a nation destined one day to exercise no slight power and influence. To the fate of America, Englishmen above all others should not be indifferent. Although the hussy ran away and married to disoblige us, still she is "a chip of the old block," and we can get on very well together in our altered relations, reaping mutual advantages from our dissevered connection, if the phrase be permissible.

I know not in what book of travel the artisan is to look who wishes to find a true picture of the condition and prospects of his fellow-workers in the New World. Some travellers paint America and the facilities which that country offers to energetic labour in very dreary colours. Others, again, such as Miss Martineau and Mr. Silk Buckingham, exhibit America as a kind of earthly Elysium, and its industrial classes as the most privileged of their order. The latter writer vividly contrasts the poor illiterate agricultural labourer in England with his more fortunate brother in his favoured Arcadia. He enters into horrible details of oppressive labour, cruel treatment, lingering suffering, and premature death of women and children in the mines of Great Britain, and the unparalleled depravity of the great manufacturing towns; while in America is to be found the "rose without a thorn"—happiness, contentment, competence, and virtue. All this is very delusive, and may be characterised by a very homely but expressive phrase—moonshine. The mere change of place will not radically affect the immutable laws upon which political economy is grounded; nor can the lot of labour ever be separated from its penalty.

The mass of the people in all countries live "from hand to mouth." To this America certainly does not form an exception. In a country, the six original States of which comprise an area larger than that of England and Wales, and where the means of existence are inexhaustible, the labourer undoubtedly has a larger scope for his exertions, and greater facility in obtaining food. But

to say that the hand-worker in America is better off than he could possibly be in England, is what I am not prepared to believe. The wage-rate is not much higher; while the continual introduction of machinery, the extensive employment of women, and the constant stream of immigration, render competition excessive, and the difficulty of obtaining work considerable. Especially is this the case in regard to such handicrafts as tailoring and shoemaking. During the war certain trades became excessively brisk; but now that the internecine strife is ended, labour assumes its normal condition, with the additional disadvantages that the market becomes over supplied, and white and black and Chinese labour are brought into unfriendly collision. Privation and suffering, more or less widespread, must inevitably be the result of this new condition of affairs.

The migratory character of the working men of New York and other northern Transatlantic cities is painfully apparent. Such of them as realise a little money remove to the West, and set up for themselves, and by this means occasionally grow prosperous. But the large majority lead quite a vagabond life, roaming from town to town in quest of work; and in this miserable way pass their lives, entirely removed from those home comforts and associations which are the just pride and privilege of English working men. Under such adverse conditions, it is vain to look for much religion, or even morality. Where undue license predominates, one must necessarily expect a corresponding degree of deterioration of character; and although desirous of being charitable, I fear that this deterioration is not exceptional, and that it pretty generally appertains to the particular class alluded to.

When in Portland (Maine), three years since, I found marked dissatisfaction prevalent among the labouring classes of that city. There was a good deal of grumbling, which it was thought by some would manifest itself in direct overt acts of insubordination. This state of feeling induced grave apprehension lest the public peace should be disturbed. The causes of this dissatisfaction, as alleged by the working population themselves, arose from the high price of provisions, the exorbitant taxation, and the comparatively low rate of wages.

"Strikes"—which are always lamentable, though in some cases unavoidable, if not justifiable—occur more frequently in America than in this country. Singular to say, however, they do not generally end as successfully as they do here. The conflict between Capital and Labour is always to be dreaded, if for no other reason than the ill-will which it is calculated to engender between the employer and the employed, whose interests should never be inimical. Still, it is

somewhat remarkable that, in a country which affords to every citizen equal rights and privileges, the influence of Capital over Labour should exert a more dominant and even despotic influence than it does in Great Britain under its worst phases.

Two extensive strikes occurred some months since in the United States, viz., that of the shoemakers in New York, and that of the colliers in Pennsylvania. Both continue with little prospect of immediate settlement. The former was a strike against the reduction of wages. It was commenced at a time when the market was dull and falling, and the movement was rather agreeable to employers than otherwise, who have resolved upon opposing the Trade Union and procuring non-society hands at a reduced rate of wages. Disturbances have arisen in consequence; so that, to prevent injury to the new workmen, detachments of police have to be stationed at the various factories. The latter strike is more serious. It has continued during the winter. Over 100,000 men are out of employment, inclusive of those occupied on the railways leading to market. Immense distress has thereby been produced. Albeit that the season is prosperous, furnaces, rolling-mills and other extensive iron-works have been compelled to put out their fires because coal cannot be procured at any cost. Those operatives who are actually starving have evinced a disposition to succumb. But the masters are inexorable; they are desirous of "stamping out" the Trades Unions, and will bear with any inconvenience and loss to achieve their end. So far a mighty industrial revolution is taking place, which bids fair to annihilate the trade guilds of America. The tyranny of the White over the Black has been abolished, but that of Capital over Labour has taken its place. Such an anomaly in a Republic is inexplicable.

Notwithstanding the drawbacks with which the skilled workman has to contend, it cannot be denied that America is a great country, whose resources admit of immense development. More than half a century since, Burke confessed that he saw nothing in history like its progress. "There is America," he observed to young Lord Bathurst; "whatever England has been growing to in 1,700 years, you shall see added to America in the course of a single life." And Burke was right. Towns spring up with prodigious rapidity, and places like Syracuse, which forty years ago had no existence, or consisted only of a single shanty and a mill, now contain several thousand inhabitants, numerous churches and handsome stores, splendid hotels, and every ostensible sign of prosperity and progress. The class most likely to be benefited by immigration is, I apprehend, the agricultural labourer, whose

position in this country, although certainly better than it has been, is still far from comfortable. But if his rude labour be more highly recompensed than it is at home; if it afford him better food, lodging, and raiment, he must needs work hard, and endure for a time those peculiar discomforts which inevitably fall to the lot of the immigrant who has to fell the forest, cultivate the prairie, and create a home for himself in the wilderness.

It was noticed at the first great International Exhibition in London that various articles of foreign manufacture were more highly finished than similar articles made by English workmen. Perhaps, with reference to American manufactured goods, the naive criticism of Captain Hall may fitly apply, namely, "That no one in that busy Republic has time to attend effectually to the completion of any given job." And, indeed, it would appear from repeated observation, that everything is prepared just up to the average taste, and to meet a ready market. If foreign artisans exhibit a greater love for their respective arts, and turn out occasionally better workmanship than Englishmen, certainly Englishmen in this respect rise superior to the Americans; a statement which I trust will not offend the sensitiveness of our Transatlantic cousins.

In the matter of education, I am inclined to think that the American is ahead of our British workman. The facilities for education everywhere abound in America, and are eagerly taken advantage of by all classes of the people. Nor, in some States at least, are the Universities open only to a privileged few. The sons of the rich, of farmers, mechanics, and even young men who have to work on the farm or in the shop, meet on the same terms and pursue their studies together. This is one reason why men belonging to a lower grade of society rise in position and take their places in the House of Assembly, or in the Senate, or even become elevated to the dignity of chief magistrate.

A word with regard to health and longevity. The working population of the United States are not so healthy as their fellow-labourers in this country; nor is the average duration of their lives as long. Difference of climate and of living conspire to this result no less than disease consequent upon overcrowding—an evil, unfortunately, as conspicuous in the great cities of America as in those of populous Europe.

S. Phillips Day.

INDIAN TEA.

No. 1.—Indian and Chinese Management Contrasted.

It will scarcely be denied that in every sphere of human industry the young aspirant after distinction, besides possessing some aptitude for the particular line in which he engages, must have passed through an ordeal of preparatory servitude ere he can hope to compete in his chosen career with already qualified men. Nor is it likely to be questioned that the student most likely to meet with success is he who has graduated in the best school, under the ablest masters, and who has subsequently been enabled, in the turmoil of the busy world, to supplement academical theories with practical results, so as to profit by the union. Experience has taught, also, that the individual who confines his energies exclusively to some particular branch of study or practice more speedily acquires proficiency than another who, gliding from subject to subject, probably gains a superficial smattering of all, but proficiency in none. These simple and self-evident truths admitted, there is no difficulty in understanding the adages of political economy that division of labour invariably produces the most notable results; and that enterprises judiciously conducted on a large scale are usually more profitable than those of limited extent.

Tea planting in India seems to be one of those industrial operations which, in an eminent degree, demands aptitude, experience, concentration of energy and division of labour; and if it possess these, there ought to be no such word as failure in the planter's vocabulary. Indian tea, and its conspicuous excellence over every other known variety, are great facts; yet, notwithstanding this superiority, the industry as a whole can scarcely at present be pronounced a commercial success. Is it that the cultivation and the manipulation of Indian tea are subject to insurmountable difficulties; can it be that the necessary operations involve such overwhelming expense as to render the industry itself precarious, and tea-gardens a lottery; or, may it be possible to trace failure, when it occurs, to causes which might have been averted, or over which those immediately interested could have exercised control? These are pregnant questions which naturally arise, and which call for an impartial review of the whole subject—a line of inquiry, the importance of which can scarcely be over-estimated when we contrast the

comparatively trifling 18,000,000 lbs. weight of tea exported last year from Calcutta to this country, with the gigantic total of 160,000,000 lbs. received during the same period from China.

In order that the contrast may be presented to the reader with all the vivid force of chronological sequence, it will be desirable briefly to scan the records of China tea from its first introduction, followed by those of the Indian herb.

The period of its earliest use as a beverage is lost in antiquity, but from native works it appears that tea became a favourite in China about A.D. 600. Early in 810 the plant was introduced into Japan, yet not until 1601 did the manufactured leaves become known in Europe; and so exceptional a curiosity did they remain for another half century, that in 1664 the gift of 2 lbs. weight to Queen Catharine, Consort of Charles II., by the East India Company, was considered a rare and valuable present. During the three following years the fragrant herb seems to have so suited the popular taste, and the consumption became so rapidly increased, that the copiousness of the supply enabled the price to be reduced from 10*l.* to 16*s.* per pound. In one of the diminutive broad-sheets of the period (1667) we read:—"Thomas Garway, Gracechurch-street, intimates that although tea has been sold at 6*l.*, and sometimes at 10*l.* per pound, he sells good tea at from 16*s.* to 50*s.* per pound." In 1670 Charles II. imposed a duty of 1*s.* 6*d.* per gallon on all tea infused in the public taverns, which in 1688 was changed to 5*s.* per pound. This tax continued till 1745, at which period the annual consumption was 730,000 lbs. Under a reduction of duty to 1*s.* per pound with 25 per cent. *ad valorem*, the termination of 1746 showed the consumption to have increased to 2,358,589 lbs. For nearly forty years, owing to successive fiscal demands on the part of different administrations, the increasing consumption was much retarded, so that by the end of 1784 it had only reached 4,948,983 lbs. But during the three following years a reduced duty of 12½ per cent. *ad valorem* had so stimulated consumption, that when the Customs accounts were made up for 1786 it was found to have quadrupled. In 1787 fresh imposts were levied; nevertheless, 17,047,054 lbs. had been cleared that year. At the opening up of the China trade in 1833, it was found that the annual consumption was 10,000,000 lbs. more than in 1816; in 1848, 17,000,000 lbs. beyond that of 1833; and at the termination of 1870, it had reached the enormous total already mentioned of 160,000,000 lbs.

Major Bruce is entitled to the honour of having discovered the indigenous tea-plant in Upper Assam, in the year 1824, for which

he was awarded the gold medal of the Society of Arts; but not until ten years thereafter were the first experimental nurseries planted, under the direction of the Indian Government, in the Seebsaugur and Debroghur districts. Even under such auspices, the year 1852 seems to have been reached ere tea-planting recommended itself to a small section of the Anglo-Indian residents; although by 1856 the Government gardens were in a fairly flourishing condition under Dr. Jamieson. Intended from the first to serve only as nurseries for the supply of tea-seedlings and seed for the rest of India, and not as a commercial speculation, they admirably fulfilled their design. Thousands of plants and many tons of seeds were distributed free to private and native planters, whilst every encouragement was extended to their operations; but the Europeans languished in their ardour, and the natives, with some rare exceptions, seemed wanting in capacity for the work. Presently a new interest was infused into the industry by the discovery that the tea-plant was also indigenous to Cachar, which so stimulated planting that by 1862 68,149 acres in this province had been leased to planters, of which 6,077 are at present in cultivation, yielding an annual crop, according to recent accounts, of about 350,000 lbs., from the labour of 6,719 coolies. It may be remarked also that during the same year, at an industrial *séance* held at Calcutta, there were twenty-eight exhibitors of Indian tea from seven different provinces, who displayed 150 varieties. Four medals and seven "honourable mentions" were awarded, and the teas generally were pronounced to be of excellent quality. Meanwhile the Government gardens continued to progress, a fact corroborated by their production in 1862 of 130 tons of tea-seed. Passing over five years of fluctuating prospects, a definite point is reached, as, in 1867, the directors of the Assam Company announced the estimated production of their 5,000 acres for the following year to be 1,500,000 lbs., or equal to 300 lbs. per acre. The actual progress of the industry may be thus tabulated:—Tea exported from Calcutta in 1851 amounted to 262,839 lbs.; 1861, 1,520,000 lbs.; 1864, 3,285,000 lbs.; 1868, 8,133,000 lbs.; 1869, 15,522,000 lbs.; 1870, 18,434,000 lbs.

Thus contrasted, it is evident that Indian tea, even with the advantages of sharing an enormous demand from a public habituated to the use of China tea, and an admitted superiority in quality and higher price, has failed, as a whole branch of industry, to make that rapid progress which characterised its early years, and has ever since marked the growth of the China trade. Why this should have occurred, I shall now endeavour to show.

It having been satisfactorily proved that the tea-plant was indigenous to the soil of India, and the foregoing statistics as regards China tea having been likewise well known, we should have naturally expected that the Chinese methods of planting, growth and manipulation would have been closely studied by Europeans. The Chinese had responded to our rapidly increasing demands for their tea with a promptitude and copiousness which proved them to be masters of the art of cultivation as well as manufacture; surely, therefore, if a thorough school of agriculture existed anywhere, it must be among them. When we look back over the past, we are simply astonished to find that intending Indian planters, after partially qualifying themselves in the London market by the study of samples, did not flock to the tea districts of China, there to learn the practical part of their business. With the exception of a few professional men of acknowledged ability and scientific acquirements who visited these districts, and to whom much of the wonderful early success of tea cultivation in the Indian Government gardens was owing, many of the first planters and superintendents were retired soldiers; civilians who had failed at other occupations; or blooming lads, sons of landowners or shareholders, fresh from some Dr. Blimber's academy of the period, who knew little of agriculture, less of horticulture, and absolutely nothing of the necessary precautions and delicacy required in tea management. Like most new branches of commerce, its practicability once settled, tea planting in India was to enrich its promoters; those who achieved the earliest plantations were to secure the richest harvests; the race must be to the swift and the battle to the strong; the whole affair was novel; no one knew anything about it, so what did it matter who was made a manager? Apparently shareholders and the public generally have now abandoned the elevated and the Utopian ideas which they once entertained as to the golden stream that was to flow into their pockets from the valley of the Brahmapootra and from the slopes of the Himalayas: their expectations are probably to-day as much depressed below the legitimate mark as formerly they overshot it. Fortunately the belief that anyone can plant and manipulate tea is not quite so prevalent now as it was then.

William Cochran.

[TO BE CONTINUED.]

COOKERY PAPERS.

Part I.

In a journal which treats of the food question, a few remarks from the pen of a practical cook will, perhaps, not be out of place. Our aim, in the first instance, must be to divest the mind of the too universal idea that good cookery is expensive. It is not so, for by good cookery everything is made the most of, and the commonest meats are rendered palatable to the refined taste of the epicure by the addition of a good sauce, whilst the exquisite flavour of the most delicate viands is destroyed by bad treatment.

A celebrated *chef* in Paris once composed a marvellous *entrée* from two or three pairs of soiled white kid gloves, and succeeded effectually in deceiving the palate of a connoisseur. Could the basis of any *plat* be more economical? The gourmet who dines off truffled turkey, turtle, and ortolans, most certainly employs good cookery, but cannot claim to be considered an economist; while on the other hand, the mutton chop of the epicure in humbler life may be rendered a delicate and palatable repast, as well as strengthening and refreshing to the system, by the agency of good cookery, whereas bad cookery will destroy the nutritive properties of the meat, and render the chop a lump of concentrated indigestion. Brillat Savarin has said in his admirable work on gastronomy, *Physiologie du Goût*, that "a great cook is a greater man than a great astronomer," and it is to be regretted that this work has never been translated into the English language for the benefit of those of his disciples who practise the divine art, but who do not understand the French language. The professors of cookery in its higher branches are, with a few exceptions, men, but the multitude who dabble in it are generally women. The epicure, the gourmet, and the voluptuary will sneer at our calling the practice of cookery by women an art, and will say with Dr. Johnson that they could write a better receipt book than any woman cook. But there are cooks and cooks; we call to mind Mistress Margaret Dodds, Mrs. Glass, Miss Acton, and others, and we can see no reason why the ladies should not be educated in the science of cookery and in the practice of it as an art, as well as in Greek, Latin, medicine, or law. To the great men who bear sway over imperial and noblemen's kitchens, or who control the "batterie de cuisine" in large

hotels and public dining places, we can say nothing that they do not already know ; they slave at their art and expend their talents, mostly unhonoured and unknown, but they are none the less the benefactors of their age. To the class of females who style themselves "good plain cooks," and to the victims of their murderous ignorance, our remarks, perchance, may have a warning sound, like the speaking of the oracle at Delphi.

Yet with Erasmus, Herodotus, Chateaubriand, and Brillat Savarin, with Francatelli, Gouffé, and other caterers for the public enjoyment, we will venture to attempt to improve the national cookery ; so we take up our parable and say that, as an art, it is "not understanded of the people." To those whose digestive organs are injured daily by the gross ignorance of "good plain cooks," we would urge the question, "What is life without a good digestion ?" There is no reason why this class of persons (female cooks) should be more ignorant of their business than others ; but as a fact, it is so. The generality of them are fit only to be scullery maids, and those who submit their stomachs to the ministration of such may just as well call in the doctor's boy when ill, instead of the doctor himself. But our theme is cookery not cooks, and dietetic chemistry is not our forte.

Give a real culinary artist fuel and materials, and the science of cookery in such hands will prove a fathomless mine of inexhaustible variety, a boundless source from which will spring delicate dishes, mysterious and refined. "There is nothing new under the sun ;" but the chemistry of cookery refutes the axiom ; for when the *Almanach des Gourmands* was published by De Perigord, people said that he had surely expended the sum of his knowledge on the dishes contained in the first year's number ; but another year, and yet another, saw issuing from the marvellous brain of that prince of cooks the endless coil of gastronomic delight, until even variety became monotonous, and the traducers of the art were silenced.

The higher the state of civilization in any country, the greater is the perfection to which the art, or rather the science, of cookery is brought ; for cookery is more a science than an art, the result of study than of natural talent. The untaught cook can never make a good soup, and a lifelong experience, reflection, study, and practice are necessary to produce a Carême, a Ude, or a Gouffé. There is very much to be said in favour of the simple and undisguised form of good cookery, and in adapting the art to the refinements of civilization, we contend that we are reducing, not increasing, the chance of indigestion ; while on the one hand we would avoid the

meagre fare of a miser, on the other we would inveigh against the coarse gluttony of a gourmand. The leg of mutton in the hands of a French woman forms a delicious tureen of palatable and nourishing soup, as well as a substantial joint, as *bouilli* or *braisé;* but our English woman's ideas rarely rise above the oven; the family baker is entrusted with the joint, and the result is too often an unpalatable greasy dish, of which all that can be said is, that it stays the cravings of hunger at the expense of the digestive organs. Still, as we pay for the best of everything, so we get the best of cooks; and as good or perhaps as extravagant a dinner can be eaten in London as in Paris. But our first-rate cooks are almost without an exception of the nation of cooks (as the French nation has been termed), and the style of cookery most universally followed by English practitioners, and admired by English connoisseurs, is French to the backbone. For we can boast but two good national dishes—roast beef and plum-pudding; the rest are, for the most part, the result of the ingenuity of our neighbours across the Channel; and we have been truly styled a nation with many religions, but only one sauce, which sauce is an awfully indigestible combination of bad butter (for our butter, as a rule, is not good) with flour and water. The national cookery of the two countries differs essentially: the French cuisine, like a Frenchman, is light as a *souffle;* the English, like an Englishman, solid as his nature. Good simple cookery is almost unknown amongst our poorer classes, whereas in France it is universally practised. Made dishes are not, as a rule, indigestible; in fact, the stomach will often gratefully receive the delicate *chef d'œuvre* of the culinary artist, when it would revolt at coarser fare. Our cookery in lodging-houses is detestable, and may be summed up in one word—grease. Our cookery in farm-houses may be stated in two words—boiled pork. In our middle classes very little skill is shown in the preparation of food, and amongst the poor none whatever.

In cases of extreme debility good cookery is a *sine quâ non* to recovery; the invalid cannot digest the greasy, nauseous beef-tea of ordinary life; and the weak washy stuff, too often imbibed, has led, if not to the utter prostration of many an already declining constitution, at least to a dangerous state of wild irritation in the digestive organs. Hence our medical men refer their patients to the great invention of the world-renowned Liebig; but, speaking as a practical cook, I unhesitatingly assert the superiority, both in flavour and nutritive properties, of good beef-tea made scientifically from fresh beef, over any concentrated essence of beef yet invented. The reasons for this are many and obvious, as the pro-

cess of strong concentration must destroy in some degree the delicate nature of the essences of the meat. But we must leave, as we have before said, the subject of dietetic chemistry in the hands of abler and more expert advocates—men who have given their time and attention to it. Yet in the discussion of our subject we must trench a little upon it, as chemistry and cookery are twin sciences, if not branches of one and the same science; for the skilled cook, like the chemist, amalgamates his materials with a due regard to their different natures, and at such periods in the process of cooking as careful consideration has taught him will render them most amenable to the chemical action of fire; any deviation from the proper quantities, time, or degree of heat, are fatal to success, and would produce a totally different result, in many instances, from that desired. Hence the necessity for much care and study, ere the tyro ventures to essay his skill in the practice of the culinary art.

If we admit the primary expense of good cookery (which we do not), we say that it is most economical in the long run, for it will be found to reduce the doctor's bill; and no one is louder in praise of scientific cookery artistically administered than the medical man of the present day. We think that enough has been urged for the cause of cookery to persuade our readers that this is a subject of vital importance to them all, and may claim as much of their attention as any other phase of sanitary reform, or any other question of public safety. We could wish that we had "the pen of a ready writer" to enable us to disseminate the principles of good cookery, and concisely but clearly to divulge the occult mysteries of the science of gastronomy from a practical point of view; but, like the rest of our cloth, we are more at home with the spit than the pen.

We propose first to consider the best means of spreading a more universal knowledge of good cookery, and then to point out the principal faults of the present practice, with a view to their remedy. To ignorant pretenders to culinary skill we would quote yet another proverb, "Stand off; ne touchez pas la broche."

A Cook.

(TO BE CONTINUED.)

According to the *Grocer*, experiments recently carried on in India have proved that coffee pulp will yield, upon distillation, 9 per cent. of its own weight of spirit, equal in strength to Scotch whisky. Nothing is said as to the flavour of this spirit in its raw state, but it appears to realise on the spot a price nearly equivalent to 4s. 6d. per gallon.

LIVING ABROAD.

Part II.

If we extend our researches into the Austrian empire, we shall find that the same state of affairs prevails as in other parts of the Continent. Moving in good society at Vienna is an expensive amusement, house-rent and the cost of carriages, horses, and furniture being double what they were twenty years ago. Servants' wages are half as much again, and the general expenses of living have increased some 70 or 80 per cent. Lord Bloomfield states that persons whose income, in 1850, was considered large even to superfluity, are now obliged to pinch in every detail of their establishments to maintain the appearance of their previous fortune, and that the cost of housekeeping has increased correspondingly in every class of society. At Munich the same thing is apparent by the records of the Municipal Inspectors of Markets, which show the rise in prices since 1850 to be as follows:—Mutton 100; beef and veal, 65 to 70; poultry, 66 to 72; game, 50; bread, 50; wheat, 28; beer, 47½; firewood, 11 per cent. Rent of houses: better class, 75 to 100; inferior class, 50 to 75; horses, 33; horse-keep, 90; carriage hire, 50; wages, 15 to 20 per cent.

Brussels, at the present time, is fabulously expensive, owing to the town being filled to extreme by the Paris refugees, who prefer running away from their homes to sternly putting down the wretched communist *canaille*, which has taken possession of the fair city. But even putting aside the fortuitous crowding of Brussels, it would be difficult to find any place in the whole Continent in which such an extraordinary change has taken place in the cost of general living, and this is attributed to the rapid and constant communication with Paris, which apparently has been an evil communication, corrupting good manners as far as affects the expenses of society.

The case is mentioned incidentally in the "Diplomatic Reports" of one of the Secretaries of the Legation, who is married, has three children, and who does not entertain, owing to the smallness of his house, and yet his unavoidable expenses are as follows:—

	Per annum.
Household, including wine, beer, lights, washing, &c.	£850
Rent of unfurnished house, with stabling	200
Servants' wages and liveries	200
Stable expenses (1 pair of horses)	120
	£1,370

To this must be added clothes, furniture, doctors' bills, and all the other miscellaneous items of a household, which will bring the cost of living quietly in Brussels to something like 1,600*l.* a year. This is borne out by a statement of the increase in all kinds of expenses between 1852 and 1869:—

	1852. francs cents.	1869. francs cents.	Increase. per cent.
House rent, per annum	8,000	13,000	62
Keep of servants, per day ..	1 50	2 50	66
Horse-keep—			
Oats, per 100 litres*	22 0	28 50	25
Straw „ „	44 0	66 0	50
Hay, per 100 kilos.†	70 0	95 0	35
Poultry, each	2 50	4 75	90
Eggs, each	0 5	0 12	70
Butter, the pound	1 70	2 80	75
Oil, the litre (1½ pint)	0 88	1 10	25

As an economical place of residence, therefore, it is plain that Brussels is no longer the Utopia that it used to be, although the education is still so excellent and comparatively so cheap, that to a certain extent it compensates for a good deal of extra expense.

Residents at the Hague, where all the rank and fashion of the Netherlands do congregate, are somewhat more fortunate, for here the increase of living has risen 30 per cent. only. House rent, however, is an item which is constantly progressive in Holland, and it was evident to me, from the size and style of the many new houses I saw, both at the Hague and Amsterdam, during a visit there in 1869, that their occupants were not living with a cheap roof over their heads. Mr. Harris considers that the expenses of housekeeping in Holland bear the proportion of about five to three to those of Switzerland, and that in the purchase of some articles the florin takes the place of the franc. It might be thought that as we went farther north, there would not be the same amount of difference, people having an impression, whether rightly or wrongly, that the colder the climate the more severe and sombre is society; which, so far, would be a reason for its being also less costly.

In practice, however, this does not seem to be the case, for the cost of living at Copenhagen is stated to be 22 per cent. higher than it was in 1850, and in some particulars, such as rent, even more. Things are even worse in Stockholm, where Mr. Davidson,

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* 1 litre = 61 cubic inches (capacity measure.)

† 1 kilolitre = 1,000 litres.

a Swedish banker, does not say much about the simplicity of society, but speaks on the contrary of the increasing luxury of life. Everything has risen 50 per cent., and families who, twenty years ago, lived comfortably on an income of 10,000 rix dollars (1 rix dollar = 4*s.* 5*d.*) can barely do so now with one of 15,000. In Russia house-rent is a formidable item—even in the shape of lodgings for bachelors. Sir A. Buchanan says that the cost of two furnished rooms in the highest storey of an hotel is at least 190*l.* per annum, and that he must be a very careful and economical man who can live, single-handed, for 800*l.* a year—that is, if he moves in any society at all. Amongst the commercial and middle classes of the chief towns, the style of living has become much more costly, their houses being fitted up with much greater luxury than heretofore; but the same change does not apply so forcibly to the higher classes, who indeed have got into the habit of shutting up their houses altogether, and spending the winter in Berlin or Paris. The servants get by far the best of it in St. Petersburg, as I think they are doing everywhere. For the very simplest service that is rendered, such as sending a message next door, it is an insult to offer a gratuity of less than a rouble, which is equal to the modest tip of 3s. 1½d. of our money. Russian housemaids moving in good society get 22*l.* a year, with extra allowances for tea; and every servant, from the major-domo down to the shoeblack, expects a douceur at Easter and Christmas. Sir A. Buchanan incidentally mentions that he pays his English coachman 110*l.* a year, so as to put him on the same footing as Russian coachmen. With such salaries as these, the "swarrys" of the St. Petersburg "gentlemen" must consist of more luxuries than boiled mutton and trimmings. It is difficult to say how far the cost of a residence in Spain is enhanced, for a city like Madrid, in which there is a revolution once a month on an average, is never sufficiently settled in its social arrangements to enable one to form any definite idea; but at Lisbon the increase in housekeeping is exceedingly definite, and amounts to 15 or 20 per cent.:—

	1850.	1869.
Rent	£180	£250
Furnishing	1,500	2,000
Carriage and pair	200	230
Women servants, per month	13*s.* to 15*s.*	14*s.* to 16*s.*
Men „ „	£2 10*s.*	£3
Porter, groom, and coachman's wages are "secco" (dry)—cost of board per day	1*s.*	1*s.* 6*d.*

On the whole, Lisbon has fared much better than other capitals. Florence is inordinately expensive to what it used to be,

having trebled in the last thirteen years, as the following table shows:—

	1858.	1869.
House rent	5,600 fr.	16,000 fr.
Furniture	one half present price.	
Keep of horse, per month	40 fr.	60 fr.
Two-horse carriage, hire per month	366 ,,	550 ,,
Maître d'hôtel, per month	48 ,,	100 ,,
Footman, per month	30 ,,	45 ,,
French cook	61 ,,	100 ,,
Coachman	110*,,	200†,,

It is clear, too, that these enormous rises in price cannot be entirely laid upon the shoulders of "society;" for even in commercial towns, where fashion is at a decidedly lower premium than money-making, we find the same state of things. In Hamburg, for instance, which is certainly not a city to which foreigners repair for pleasant living, the cost of household living is dearer by 80 per cent. than it was twenty years ago. Certain articles of foreign produce, such as sugar, tea, coffee, and wine, have only risen about 30 per cent.; but to make up for this, many others are at least 100 per cent. dearer. It is true that Hamburg is not only a money-making, but a money-spending place; for Mr. Ward tells us "that the merchants are fond of giving entertainments which rival those of London and Paris in the excellence of the cookery and the rarity of the wines. The dress of the ladies has become highly extravagant, and many of them wear diamonds with a profusion which in other countries would scarcely be displayed, except at Court."

Phillips Bevan.

The following communication from Reclam's journal of *Gesundheitspflege* will form a valuable addition to food statistics:—The soup kitchen of the town of Leipzig received from the butcher

	Beef.	Pork.	Mutton.	Smoked Beef.
	18,305 lbs.	1,633 lbs.	3,787 lbs.	956 lbs.
They weighed after boiling	13,294 ,,	1,325 ,,	2,612 ,,	837 ,,
The broth consequently contained	5,011 ,,	308 ,,	1,175 ,,	119 ,,
After cutting off the meat, there remained bones, etc.	2,603 ,,	181 ,,	404 ,,	34 ,,
The meat itself weighed	10,591 ,,	1,244 ,,	2,208 ,,	803 ,,
Hence, per lb. of butcher's meat, there were obtained of meat for eating purposes	18·23 oz.	24·18 oz.	9·33 oz.	13·43 oz.

* Including helper and stable utensils. † Not including anything.

POPULAR FOOD ANALYSIS.

No. 12.—Bread (Continued).

Before continuing our examination of the bread of the metropolis, we purpose saying a few words on unfermented breads. These are all raised by the action of carbonic dioxide gas, liberated from some suitable material, and are of two classes:—(1) that in which the gas is generated in a separate vessel, and passed into the dough; and (2) that in which a mixture of chemical substances is introduced into the flour, so that they may evolve the gas when moisture is applied. As the first process is at once the most complete and wholesome, we will devote this paper to a short description of it. The system of making aërated bread was invented by Dr. Dauglish, and a company having been some years ago formed to work his patent, the resulting material is now in constant use all over the metropolis. The whole process is performed by machinery, which we will endeavour to explain, as far as can be done by words alone, without a drawing. The apparatus consists of two very strong vessels capable of sustaining a pressure of over 120 lbs. to the square inch. These two appliances are connected by means of an opening furnished with a valve, and are called respectively the mixer and the water-vessel. The mixer is provided with a shaft passing through it, and furnished with mixing arms, which can be driven by steam-power, as well as with a large tube and stopcock, through which the finished dough can be drawn off. The water-vessel communicates with a set of condensing pumps, which serve to force the gas into the fluid contained in it. To start the process, about 560 lbs. of flour are put into the mixer, and 30 gallons of water, with the requisite quantity of salt, are introduced into the water-vessel, the valve between the two having been previously closed. The condensing pumps are now set to work to pump the carbonic dioxide into the water-vessel, from a gasometer in which it has been stored over water. As the pumping continues the pressure increases, and the gas dissolves in the water, exactly as explained in our article on aërated beverages. When a sufficient amount of aëration has been attained, the valve is opened, and the water is permitted to flow into the mixer. The arms are now set to work, and the whole is made into dough in a few minutes. The stopcock of the mixer

having been opened, the pressure of the gas causes the dough to squirt out through the delivery pipe, and as fast as it does so, it is cut off into loaves, which are received in appropriate baskets, and carried to the ovens.

This system of bread-making not only obviates the discoloration of the flour by the changing of the starch (as explained last month), but also ensures the most perfect cleanliness in manipulation. The bread produced is exquisitely white and free from the least trace of sourness, and we feel bound to confess that all the samples which we have yet examined have been absolutely pure. Of course, as this patent tends to injure vested interests, several objections to it are current. The first is that the bread is apt to contain traces of arsenic from the acid employed in generating the carbonic dioxide gas; but this is evidently fallacious, as the gas is made in a separate generator and stored over water. The second is better founded, viz., that some people, after a short use of the bread, are attacked by mild diarrhœa. But may not this arise from the very purity of the article? It is quite possible that, after a person has for years eaten alumed or coppered bread, he may experience such an effect when the daily astringent action is removed; but in most cases we think that this may be got over by simply keeping to the use of the new article till the digestive system recovers from its former artificial state. On the whole, we are inclined to believe that when the patent runs out, this method of bread-making will be employed by most large bakers.

We will now continue our report of the examination of London bread. During the month the *Journal* collectors have been at work in the west of London, and have purchased and forwarded twenty samples for examination. This has been carried through, and our metropolitan readers will be glad to see that the results are better than those given last month.

No.	Alum.	Copper.	No.	Alum.	Copper
1	none.	none.	11	10·1	none.
2	,,	,,	12	none.	,,
3	,,	,,	13	19·8	,,
4	,,	,,	14	none.	,,
5	,,	0.46	15	11·0	,,
6	,,	,,	16	59·0	,,
7	,,	0.50	17	none.	,,
8	,,	none.	18	22·0	,,
9	9·8	,,	19	none.	,,
10	none.	,,	20	,,	,,

This is more reassuring, for only two contained copper, and even then it has been either introduced with a more sparing hand or

more equally distributed through the mass of bread. There is, however, a slight increase of alum, as six samples were so contaminated. Up to the present the total state of the bread examined is as follows:—

Pure bread	15
Alumed bread	11
Coppered bread	18

We shall continue our examination of the remaining districts until a fair result of all the metropolitan bread is attained, and we trust that the percentage of pure bread will be much increased before the termination of the experiments.

MORE MALOO MIXTURE.

In our October impression we gave a pictorial representation and description of the notorious Maloo Mixture, but we need scarcely say that so long as a market is open for the disposal of this vile rubbish, it will continue to be sent from China. By recent advices we learn that a parcel of *two thousand chests* is at present on the sea in the hold of a certain good ship, which sailed from Shanghai about the beginning of February. This interesting consignment represents about *one hundred and eighty thousand pounds* weight of questionable tea, which, if permitted to enter into home consumption, will be a fraud on buyers to the extent of at least 20,000*l.*, and the revenue will have secured about 2,250*l.*, in the form of duty. Surely, to be forewarned is to be forearmed, and the prompt confiscation of the entire shipment, after examination on arrival, would be the smallest boon which an indignant public will expect at the hands of those in authority. But we go further than this, and would suggest to some spirited M.P. the propriety of immediately following up Mr. Muntz's Adulterations Bill by a codicil compelling the importer of such nefarious abomination to tranship it at his own expense to the port from whence it came, and to give a bond for the due performance of what would simply be an act of tardy expiation. In any case we shall keep our analytical eye on this disgraceful importation, and hope before long to report upon it.

J. Muter, Ph.D.

NEW EDIBLES.

No. 1.—Fruits.

England is to a great extent dependent upon her own resources for the supply of edible fruits. Oranges, dates, cocoa-nuts and bananas are amongst the best-known foreign productions brought into this country, always of course excepting the large importations from the Ionian and Greek Islands of dried grapes in the form of raisins and currants; but there are many tropical fruits which, travellers tell us, will bear favourable comparison with some of our finest home produce. The mangosteen, mango, custard apple, and guava, natives of widely different parts of the globe, are examples. We do not write for the purpose of bringing these or any other similar fruits, natives of hot climates, forward for experiments in cultivation in this country. We well know that in the best hot-houses in the kingdom many of the plants themselves have been found to be most difficult of cultivation, and only now and then have been induced to form their fruits, let alone to ripen them to perfection; but what we do think is, that several of them might be brought to England, either carefully packed like oranges and bananas, or else preserved in syrups or sugar. It is true that some of the fruits of tropical climes which have been frequently much extolled by travellers, are, to many European tastes, absolutely nasty, when eaten raw, but every one knows that the application of heat in the process of cooking completely alters the flavour and condition of edibles, more especially those of vegetable origin. A raw guava, or even a raw mango, may not be to every Englishman's palate a satisfactory exchange for a mellow pear or a juicy peach, but preserved mango and guava jelly are things by no means to be despised. Some of these preserved foreign fruits are delicacies only to be obtained at the best west-end houses, at prices too high for ordinary consumers; but if large quantities were sent into the market, and the prices consequently lowered, the demand would become greater and the sale more profitable, and would probably lead to the introduction of new articles, to the mutual benefit both of ourselves and the growers and preservers of the fruits. But apart from the question of preserved fruits, many new to British commerce might be introduced in a fresh state, and

this would be especially profitable during the winter season, when our own produce is scarce and the variety for the dessert table very limited.

We well know that the one great obstacle to the introduction or adaptation of new edibles of any description is the very general prejudice in favour of what we already have, and the strong objection to direct our tastes out of the ordinary groove; but that this is a matter that can be overcome by force of circumstances has been exemplified in a marked degree by the peculiar nature of the food supplies of Paris during the recent investment. With our well-traversed ocean highways, and rapid means of transport from one country to another, it is surprising how little has been done in the introduction of new food commodities. Now and then we hear of some novelty making its appearance in the market, but not meeting at once with a ready welcome, owing, perhaps, to its uses not being generally known, or from the samples having deteriorated on the voyage, through want of care and forethought in the packing, we seldom, or perhaps never, hear of it again.

That foreign fruits may become articles of trade with us is shown in many which a few years since were only to be seen occasionally in Covent Garden Market, but which are now to be met with in the proper seasons at most good greengrocers. The prickly pear may be taken as an example. From the opportunities which we have had of tasting fruits of foreign climes, we have no hesitation in saying that many of them might be introduced and become useful here; and for the purpose of making this more clear to our readers and to those who have either the means or a desire to aid in the general utilisation of any of them, we will enumerate a few,—the products of our West Indian possessions, a group of fertile islands which are brought comparatively near to us by our frequent and rapid intercourse. Many species of *Anona* are grown in these islands, as well as in South America, Africa, and the East Indies, and other parts of the tropics. They are very generally known as custard apples, but the different species have distinct names, the true custard apple being *Anona reticulata*, the cherimoyer, *A. cherimolia*, the sweet sop, *A. squamosa*, the sour sop, *A. muricata*, and the alligator apple, *A. palustris*. The best of all these is said to be the cherimoyer, which, though attaining its greatest perfection in Peru, and producing the best fruits known to the natives, has become naturalised in Jamaica and the Caribbean Islands, and has been even introduced and cultivated in the warmer parts of Europe. The tree grows to about 20 feet high, and the fruit is about the size of a small melon. When ripe it is outwardly of a darkish purple colour, scaly, or

reticulated somewhat like a pine-apple, while the interior is a mass of soft yellowish-white sweetish pulp in which the shining brown seeds are buried.

The sweet sop is the produce of a tree growing to about the same height as the cherimoyer, and the fruit is about the size of an artichoke; and the pulp is said, when properly ripe, to have a taste somewhat like clotted cream and sugar. These fruits, wherever grown, are always much prized, and are eaten in large quantities. The plant seems to be originally a native of South America, but is now very widely distributed throughout the tropics.

The sour sop is the fruit of a tree resembling the former in point of size. The shape of the fruit is similar to the cherimoyer, but it is of a lighter or greenish colour, and the pulp is also lighter. These fruits are very abundant, and the negroes eat large quantities of them. The alligator apple is not so good as either of the former; a wine is, however, made in Brazil from it. The tree is very common in Jamaica, in damp situations and on the borders of rivers. Living plants of all the above species of *Anona* have been introduced into England at different periods, some as early as the middle of the 17th century.

The guava, to which we alluded at the commencement of this paper, is also a native of the West Indies, and is likewise very generally cultivated in the East. Two species are known, viz., the pear-shaped (*Psidium pyriferum*) and the apple-shaped or red guava (*P. pomiferum*). The fruit of the former species resembles a pear, both in shape and size, and when ripe is of a delicate yellow colour; its flavour is pleasantly aromatic, and if, as we before said, it is not quite equal to the finest of our home-grown fruits, it is at least a good substitute. It is well known that these fruits, like the mango, will not keep long after ripening; but, considering the shortness of the journey from the West Indies, we think that they might be gathered in an unripe state and carefully packed for our markets. The plant was introduced into England about the middle of the 17th century, and not uncommonly produces its fruits in our hot-houses.

The fruits of *P. pomiferum* are somewhat astringent, and are therefore not much used; if, however, the plants were carefully cultivated, we have no doubt that in course of time this objection might be displaced.

Many other fruits might be mentioned, as, for instance, the anchovy pear (*Grias cauliflora*), the avocado pear (*Persea gratissima*), the mammee apple (*Mammea americana*), &c., but to exhaust this wide and interesting subject would occupy too much

space, so we must content ourselves by simply giving our experience of two African preserves, which have never yet appeared in commerce; both of these were made in Natal—one of the fruits of a spiny plant, known to the natives as the "Amatungulu" (*Arduina grandiflora*), and the other of the kei apple (*Aberia Caffra*). The fruits of the amatungulu vary in form and size from that of a large olive to a small round plum; they have a thin skin covering a mass of soft pulp, and in the centre a number of small seeds lie embedded. The kei apple is a thin-skinned, golden yellow fruit, about the size of a small walnut. We have not had an opportunity of tasting either of these fruits in the fresh state, but in a preserved form we can accord a verdict strongly in their favour. Though the aim throughout this paper has been the more general utilisation of foreign fruits in this country, we cannot leave the subject without saying that many of our own fruits, both wild and those of easy cultivation, might be much more generally used. Plentiful as blackberries proverbially are, and delicious as is their flavour, it is a fact to be deplored that so many bushels are actually wasted every year for want of gathering, and this even in close proximity of many poor villages. Then, again, the gourd, vegetable-marrow, or pumpkin, are plants easily grown on almost any rubbish heap, and the fruits are often produced in great abundance, and might be preserved in sugar for winter use. Pumpkin-pie is a dish not unknown, but perhaps not generally appreciated; nevertheless, in poor families the use of the pumpkin and many other gourds might be more advocated for pies or puddings, for with a few apples, blackberries, or other juicy or acid fruits, a cheap and wholesome dish could easily be prepared.

John R. Jackson, A.L.S.

The *Frauendorfer Gartenzeitung* contains the following:—A new invention which has recently been made in California must prove highly advantageous to States where wine and fruit are largely cultivated, especially as regards the preparation of wine and cyder. According to the commonly used process several months elapse before the fermentation is completed, after which the wine has to be stored for several years before it is ripe. The deficiency in our present process of fermentation is to be found in the fact, that the surface of the liquid in the vats only comes in contact with the air. In the new process air is brought in contact with all parts of the liquid by means of perforated tubes. It is stated that the whole process is finished in about five days (?), and that in two or four weeks afterwards the wine is clear and ripe, and no longer subject to spontaneous fermentation.

COUSCOUSOU,

The National Dish of Algeria.

Couscousou is in reality nothing but the *semoule* of Algerian *hard* wheat. If this grain cannot be obtained, that from Sicily or Taganrog will answer equally well. To make a dish for six hungry people, one must have two fowls, or one fowl and a piece of mutton, half a pound of fresh butter, and as many different kinds of vegetables as can be conveniently procured. Put a good sized lump of butter in an earthenware *marmite*, or iron saucepan; brown two large Portugal onions, and cut them in pieces; then place in the saucepan the meat and the dismembered fowls, and let them simmer a little while, in order that they may absorb the flavour of the onions and butter; then add sufficient boiling water to cover them, season with salt and pepper, and allow the whole to cook for about one hour and a half. While this is going on, the couscousou should be prepared. Place about half a pound of it in a large, shallow, wooden dish; wet it with a little water, add some salt, and stir it up, always in the same direction, with the palm of the hand. This done, put it in a tin *passoire* or strainer; fix it on the saucepan, and allow it to be cooked by the steam of the latter; return it twice during the operation to the wooden vessel, add a little butter, and stir it round and round as before, in order that the grains may remain separate, like well boiled rice; after each stirring, return it to its place above the saucepan; it will require two hours to cook. During the cooking, prepare the vegetables, such as carrots, vegetable marrow, artichokes, peas, haricots, cauliflower, potatoes, etc.; cut them up, and put them into the saucepan just in sufficient time to ensure their being ready when the whole is cooked; some vegetables will, of course, require more cooking than others. To serve the dish, put a lump of fresh butter in the centre, cover it with the couscousou, sprinkle it with the gravy of the fowls, taking care not to add so much as would turn the grain into a pasty or pulpy mass; stir it well up with more salt, if necessary, and a little black and red pepper; arrange the pieces of fowl or meat round the exterior margin of the dish, and pile the vegetables on the top. The process is somewhat complicated, but the result is eminently satisfactory. To ensure the vapour which cooks the grain being thoroughly economised, tie bands of old linen, soaked in water and sprinkled with a little common flour, over the junction between the saucepan and strainer; or, better still, have a steamer prepared expressly for the purpose. In any case, be careful that the couscousou is always covered up.

R. P.

CORRESPONDENCE.

House of Commons,

April 5th, 1871.

Sir,—It appears to me that the writer of the article "Food Producers of Great Britain," in a late number of the *Food Journal*, has been led into drawing erroneous conclusions from the statistics which he uses, and that his article is calculated to make the public think that British agriculture is in a very bad way indeed. Year after year, says he, the imports of cattle, of grain, corn, and meal, have increased—increased, too, at a rate far exceeding the increase of population, "four times faster than the mouths over here which are to eat it." At the same time fewer folk are employed in agriculture, therefore it is apparent that agriculture is in a declining state—that, at least, is the inference I draw from the mode in which the facts are stated—yet, a glance at the agricultural returns shows that the number of cattle bred in 1869-70 exceed those bred in Great Britain in the preceding year by 157,000, while in the year before we find an increase of 152,000, and still larger figures in 1867. We all know that the rent for farms rises continually; in other words, that fresh capital is pushed into agriculture year after year; and surely this leads to more comfortable conclusions than those at which Mr. Harrison has arrived. The number of cattle imported has increased, not because our own stock has diminished, but because our people, grown richer and more prosperous, consume and can pay for a larger amount of animal food than they could in the earlier years quoted in the *Journal*.

The number of people employed in agricultural pursuits has, it is true, decreased; wages have risen, and the farmer, in consequence, is gradually learning to economise labour by the use of machinery; but the agricultural labourer has happily shared in the general prosperity of the nation, is no longer wedded to the soil of the parish where he was born, but takes advantage of the modern facilities for locomotion, and seeks his fortune in fresh fields and pastures new.

I beg, too, that you will not think that this migration to towns, this scarcity of agricultural labour, is peculiar to England alone; it goes on all the world over, it is one of the signs of the times, out of the power of man to control or alter, and is in no way due to our peculiar laws, or to any restrictive influence incidental to the tenure of land in England. If I were not afraid of intruding unwarrantably on your space, I could say much of the state of the agricultural labourer in foreign lands, very interesting reports on which are lying by me at this moment.

Simultaneously with the increase of our cattle we have brought nearly 80,000 fresh acres into cultivation during the past twelve months—no inconsiderable quantity in a land already so fully occupied.

I cannot agree with your contributor that any considerable number of our truant agriculturists is to be found in America. I do not know what the returns on the subject would show, but in my own neighbourhood, half mining half agricultural, the tide of emigration flows from the metal-working classes, whose fortunes are dependent on the vicissitudes of trade, or the commercial stability of their employers. I would venture to say, Sir, in answer to your contributor's question, How can this hemorrhage be stopped? that it is not desirable to stop it;

agricultural labour is merely following the natural law of supply and demand, and the surplus population leaves its home to seek work elsewhere, where wages are higher; as labour becomes scarcer in the agricultural districts, wages will rise, the tide will turn, and agricultural labour be drawn in turn from town to country. This is the result of natural laws, which can be certainly predicated by any political economist; it has nothing to do with primogeniture, or entail, or conveyance of land, or the security of the farmer's capital; entail and primogeniture (whether politically desirable or not, is beside the mark) do not affect our system of agriculture, as entailed estates can now be improved at the cost of mortgaging their future revenues, even though those revenues may belong not to the life owner, but to his successor, while a farmer's capital is secured either by lease or by "the custom of the country"—his improvements, when tangible, being his own, not his landlords. (15 Vic. cap. 25.) "If the tenant, with the consent of his landlord, shall erect any building, machinery, &c., such building shall be the property of the tenant, and shall be removable by him," first giving the landlord due notice, when he has the right of pre-emption at a fair valuation. I fear, Sir, that this letter has been spun out till I risk your declining to read it, yet I hope that it says enough to indicate the true state of agricultural labour and capital—certainly the security of agricultural capital is a result to be obtained at smaller cost than that of upsetting the entire land tenure, and with it the social condition of the United Kingdom. Large farms (our favourite system now-a-days) have been adopted, not because the agricultural population is sparse, but because large farms pay, while *la petite culture* does not; the well-being of agriculture, the amelioration in the condition of the labouring poor, must be sought in the advance of their own intelligence and education, in the improvement of present methods of cultivation and agricultural science, not in vast political change, which could not fail to create so extensive a disturbance in the apportionment of property that it could hardly be effected without revolution and utter social disruption.—J. R. B.

A M. Pelouze is said (*Chemical News*) to have re-discovered a plan for preserving meat, invented at the end of last century by M. Vilaris, a chemist at Bordeaux. This system, whatever it was, is described as having been very successful, and to have defied any attempt by analysis to discover its nature. Like the philosopher's stone, the mystery of meat-preserving is not yet revealed to us, and fame and fortune are still open to the lucky discoverer.

A correspondent, writing about limejuice, believes "that we do not get so much as a single gallon of real limejuice imported into this country in a twelvemonth; and that the liquid known as the limejuice of commerce is, in point of fact, *lemon* juice; quite as effective in its anti-scorbutic properties, but not so innocent."

From the reports of the *Nederl. Maatsch.*, Nov., 1870, p. 311, it appears that alum is still used in Holland for the purpose of doctoring bread. Robertson examined a piece of bread, which looked suspicious on account of its causing boiled milk to coagulate. The bread was treated with distilled water, filtered, and mixed with chloride of barium, which caused a precipitate. Another portion of the same bread was calcined, the ashes heated with bisulfuskalicus, the mass extracted with diluted hydro-chloric acid, and a solution of potassium in alcohol added. Chloride of ammonium gave a rich precipitate. The same result obtained of the acid solution before being treated with potassium was boiled down to dryness, and then redissolved. It is hence evident that the adulteration was not caused by silicic acid, but by some aluminous substance.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

RICE FRITTERS.

Rice Fritters are more generally made with whole rice, but ground rice may be used instead in the following way:—Mix a handful of ground rice with milk, set it on the fire and stir it constantly, adding a little cream, sugar, grated lemon peel, and orange flowers, or a few drops of essence of vanilla. When become sufficiently thick and stiff, remove it from the fire, and pour it smoothly over a slab or flat tin; let it cool, cut out the fritters with cutters, dip them in butter, or in egg and bread crumbs, and fry them in a very hot pan. As soon as the fritters are of a nice colour, drain, sprinkle them with powdered sugar, and serve.

AN OLD ENGLISH SPRING SALAD OF 1682.

"There is a sort of sallet commonly gathered in the spring, consisting of divers young buds and sprouts both of trees and herbs, the which being gathered discreetly with nothing but what is very young and tender, and so that no one thing exceed the other, but there may be a fine agreement in their relish, if so it will be very acceptable to many:—Violets, small sprouts of burnet, young leaves of primroses and flowers, mints, sorrel, buds of gooseberries, roses, barberries, flowers of burage, bugloss, cowpagles and archangel."

POT-AU-FEU.

Take 1 kilogramme (about 2 lbs.) of meat of the second quality, add 3 litres of water and a little salt, place it on a moderate fire, and take off the scum when well risen, just before it boils; after the meat has cooked for two hours, add vegetables, turnips, carrots, parsnips, leeks, celery, etc., and let it continue to boil slowly for three or four hours. It should be kept cooking for five or six hours altogether. If soup is required, more than boiled meat, the fresh meat should be put into cold water; if boiled meat is required, a tender piece of meat, kept a sufficiently long time, should be chosen and put in when the water is boiling. By adding water after it has been cooking for some minutes, some of the nutritive parts are lost, and only a weak broth is obtained. The fat may be skimmed off the *Pot-au-feu* before serving, and should not be wasted, for it will do for other culinary purposes.

HORSE JELLY (Siege Fare).

Take the part between the knees and hocks, break the bones in several pieces, and add the same quantity of water as the height of the meat; boil for six or seven hours, with salt, pepper, onions, sweet herbs, and the last tail bones, if you have them; pass through a cloth and skim off the fat. When cold an excellent jelly is obtained for culinary purposes.

NOTES OF THE MONTH.

A new oyster bed has been discovered on the Dutch coast, near Flushing, which promises to yield a good supply. Some Colchester smacks crossed over, and have each returned with a cargo of from 140 to 150 tubs, each tub containing 150 oysters.

Amongst the scientific items of the month has been the reading of two papers at the Society of Arts, one by Mr. Ferdinand Kohn, on the diffusion process at present so extensively used in the sugar manufacture; the other by Professor Voelcker on the cultivation of the beetroot. This industry appears to be extending in Berkshire, where it has been commenced on a large scale for distilling purposes at Buscot, near Farringdon. M. de Mornay proposes to follow it up by erecting a sugar factory similar to that of Mr. Duncan at Lavenham, which has proved such an admirable success.

Mr. Bailey Denton has sounded the alarm, not a moment before it is needed, of a probable deficiency in our water supply throughout the country during the coming summer. For three or four years past the rainfall has been diminishing, and our springs are now lower, and our surface ponds have less water in them than for a long time past, a state of things which, at this season of the year, is not likely to be remedied naturally to any great extent. Mr. Denton suggests that cottage owners should form underground tanks, which would go far to prevent the miseries of a water famine. According to him, a labourer's cottage and outbuildings generally cover about $2\frac{1}{2}$ poles of land; and half an inch of rain falling upon them would, if collected, furnish 354 gallons, which, at ten gallons a day, would last five weeks. There is no doubt but that the time is fast coming when we shall not dare to waste our water resources in the reckless way that we do now.

The Value of Salt Meat.—A gentleman breakfasting with another, found his host eating some hard dry junk, which was offered to the guest. "Why do you eat such stuff?" asked the latter, in astonishment. "Because," replied the former, "by twelve o'clock I get a thirst on for which I would not take ten dollars."

From the *City of London Directory*, we glean some curious information as to the old City Companies, not the least interesting portions of which are the armorial bearings. For instance, the Fruiterers' Company, which was granted a charter by James I. in 1606, has for its arms the Tree of Paradise, environed with the serpent between Adam and Eve, with the motto "*Arbor vitæ Christus; Fructus per fidem gustamus.*" The Butchers' Company has for arms two slaughter axes, between three bulls' heads. The crest and supporters are flying bulls, and the motto, "*Omnia subjecisti sub pedibus, oves et boves.*"

We regret to announce the death of Mr. George Warriner, whose practical experiments in cooking, and particularly in the matter of preserved meats, have been of very considerable value to the army, in which he had for some time held the post of Instructor in cookery. A little before his death, he had succeeded in producing a kind of portable sausage for the use of troops, similar to the Prussian *Erbswurst*.

By a typographical error in the March number of the *Food Journal* (page 80), the *Boston Journal of Chemistry* is credited with the responsibility of a monstrous *pea*, $13\frac{1}{2}$ in. round. It should have been "*pear*," and the proper variety is that of Vicar of *Wink*field.

Mr. Hope, in a letter to the *Lancet*, strongly disputes Dr. Cobbold's conclusions with regard to the dangers of sewage irrigation (*Food Journal*, vol. ii. p. 96), and argues that the inimical influences to which the ova of the parasites are subjected by the fluctuations of temperature and moisture, and by the rough treatment which they would undergo in their passage through the sewers to the field, would go far to destroy their fertility. Fortunately for Mr. Hope's conscience, the science of helminthology (in its relation to sewage) is so little understood, that nobody would be rash or premature enough to accuse him of sowing death broadcast, and if Dr. Cobbold's views ultimately turn out erroneous, we should imagine that no one would be better pleased than himself. The issues of this question are of the utmost importance—and we sincerely hope that the matter will be fought out in a fair field and no favour.

OUR EXPERIMENTAL COLUMN.

Desiccated Soup.—The siege of Paris has taught us, among other lessons, the value of preserved provisions in a concentrated condition, and the whole tendency of the age is to produce novelties of this class. The preparation before us ("Edwards' Desiccated Soup") is made of Liebig's extract and vegetables, and only requires the addition of boiling water and salt to make a very palatable dish of *purée de pommes de terre*. It is really a good article, and our analyst reports it free from impurities; but we think that Messrs. King and Son would find it wise to reduce the quantity of mint flavouring, which is, to our taste, at present too *prononcée*.

NOTICES OF BOOKS.

Mr. Dickinson, in his interesting little work on "The Tonic Treatment of Gout," speaks very truly of the asthenic type of this disease which prevails in the present day, and says that the majority of cases in England depend on debility, brought on by any cause which depresses the nervous power and impoverishes the blood. In the time of our forefathers the daily bottle of port wine did the mischief, whereas now the same result is produced by the opposite cause—viz., excess of brain labour (a complaint from which most of us are suffering), combined, in some instances, with a too rigidly observed regimen. We particularly commend the chapter on Rules of Living to people of gouty diathesis.

Mineral and Aerated Waters, by H. D. Rawlings.—The best guarantee that the public can have for the manufacture of a good article is the purveyor's thorough knowledge of his business, and that Mr. Rawlings has this advantage is evident from the little work now under review. In it the author discusses, and lucidly points out, the conditions necessary for the production of good aërated beverages, and shows that he is fully aware of the advantages afforded by keeping an analytical watch on the purity of the water and gas employed in his processes. If all manufacturers were equally well informed and careful, we should soon have an end to our frequent but necessary exposures.

BOOKS RECEIVED.

Our Meat Supply from Abroad. By T. J. Hutchinson, F.R.G.S., H.M. Consul for Callao.

On the Human Hair. By W. Davey.

THE
FOOD JOURNAL.

FOREIGN OFFICE REPORTS ON THE ADULTERATION OF FOOD, ETC.—PART X.

DURING the last nine months we have been enabled to present to the readers of the *Food Journal* reports from H.M. Embassies, Legations, and Consulates in various parts of the world, on the subject of Food Adulteration and the legislation in force for its repression.

Replies having now been received from most parts of the world where Her Britannic Majesty is represented, we have thought it advisable to devote the present article to an epitome or condensed summary of their contents, the more particularly as new and (may we venture to hope?) improved legislation is on the *tapis* in this country; and it may be of use to those who are interested in the subject to be able to refer in a convenient form to the current laws of the civilised world, from all of which something to the purpose may be extracted. Indeed, although in most matters English legislation contrasts happily and favourably with that of other kingdoms, it certainly does not do so in the matter of food adulteration; for in this we have carried our *laissez aller* principle to such an extent, that practically we are without a law, and utterly at the mercy of our masters, the adulterating tradesmen.

The following alphabetical table will show at a glance the respective punishments meted out to offenders in the places named:—

ALEXANDRIA (Egypt).—Stringent inspection, but no punishments mentioned.

ATHENS (Greece).—Ordinary adulteration, fine of 5 to 200 drachmæ (3*s.* 9*d.* to 7*l.* 10*s.*).

AUSTRIA.—See Trieste.

AZORES (Ponta Delgada).—For first offence, fine of 4 dols.; second, 8 dols. If death ensues from adulteration, church penance.

BAVARIA.—See Munich.

BOSNA SERAI (Turkey).—Ordinary adulteration, imprisonment from a month to one year, or fine of a half gold medjidieh to 5 med. (9*s.* 4*d.* to 4*l.* 12*s.*). If materials are injurious, fine of 5 to 100 gold med., or imprisonment for three years.

BRINDISI (Italy).—Ordinary adulteration, fine to 50 fr., or imprisonment from one to five days; if dangerous to health, imprisonment from one month to two years.

BUFFALO (United States).—For adulterating bread, fine of 50 cents. per loaf.

Cagliari (Sardinia).—Ordinary adulteration, forfeit of license and fine of 5 to 10 fr. for each article.

Cincinnati (United States).—Adulteration of milk, fine of 5 dols. to 100 dols., or imprisonment up to ninety days.

Copenhagen (Denmark).—Falsifying wares, first offence, fine 100 dols.; second, increased fine and imprisonment.

Denmark.—See Copenhagen.

Egypt.—See Alexandria.

Fiume (Austria).—Ordinary adulteration, imprisonment up to six months and fine.

Florence (Italy).—For selling unwholesome food, suspension of license and imprisonment from five days to three months; for adulteration, imprisonment from one month to two years; if death arises, imprisonment up to seven years.

Georgia (United States).—Ordinary adulteration, fine or imprisonment, or both; for accessories to the fact, fine of 1,000 dols., imprisonment up to six months, whipping up to thirty-nine lashes, to work in a chain gang for twelve months—all at the option of the judge.

Germany.—See Memel, &c.

Greece.—See Athens.

Hague, The (Netherlands).—Ordinary adulteration, fine 6 fr. to 10 fr.; if injurious to health, imprisonment from two to five years and fine of 200 to 500 florins, withdrawal of license, sentence to be placarded or published at the expense of the offender.

Hamburg (Germany).—Ordinary adulteration, fine of 200 dols. (30*l.*) or imprisonment for six months; if injurious to health, speech, sight, or hearing, imprisonment from three months to four years.

Illinois (United States).—Ordinary adulteration, fine up to 100 dols. or imprisonment up to three months.

Italy.—See Florence.

Janina (Turkey).—Ordinary adulteration, fine or imprisonment.

Konigsburg (Germany).—See Memel.

Leipzig (Germany).—Ordinary adulteration, fine of 50 thalers (7*l.* 10*s.*) or imprisonment.

Madeira.—Selling adulterated goods, imprisonment from two months to two years.

Massachusets (United States).—Adulteration of bread, imprisonment up to one year, or fine up to 300 dols.; adulteration of milk, fine of 20 to 100 dols.

Memel (Germany).—*Knowingly* adulterating with dangerous materials, imprisonment with hard labour from fifteen months to five years; if there is loss of life, death. *Carelessly* adulterating, imprisonment with hard labour up to six months; if loss of life, without hard labour from two months to two years. *Intentionally* adulterating, imprisonment from one year to ten years; if bodily injury results, imprisonment up to twenty years; if death results, imprisonment for life.

Milan (N. Italy).—Ordinary adulteration, imprisonment from one month to two years; if death ensues, imprisonment for seven years.

Mississippi (United States).—Adulteration of liquors, imprisonment from one to five years.

Missouri (United States).—Ordinary adulteration, imprisonment up to one year, or fine 500 dols.; adulteration of liquors, imprisonment from two to five years.

Mobile (United States).—Ordinary adulteration, fine of 100 to 500 dols., and imprisonment with hard labour up to six months may be added.

Monte Video (S. America).—Ordinary adulteration, fine and confiscation of goods.

Monastir (Turkey).—Ordinary adulteration, fine of 6 to 10 bishlicks (5*s.* 6*d.* to 9*s.*), first offence; fine of 12 to 20 bishlicks (11*s.* to 18*s.*), second offence; fine of 24 to 30 bishlicks (22*s.* to 29*s.*), third offence.

Morocco.—See Tangiers.

Munich (Bavaria).—Selling adulterated goods injurious to health, imprisonment up to two months and fine of 1,000 florins (83*l.* 6*s.* 8*d.*); making such goods, fine of 400 florins and imprisonment up to two years; ordinary adulteration, arrest or fine of 150 florins.

Netherlands.—See the Hague.

New Orleans (United States).—Ordinary adulteration, fine of 5 to 50 dols.

New York (United States).—Adulteration of milk, fine 50 dols., or imprisonment to thirty days.

Nicolaieff.—See Odessa.

Norway.—Ordinary adulteration, imprisonment up to thirty days, with bread and water diet, or to three years, with hard labour; if dangerous to health, imprisonment with hard labour from six months to six years.

Odessa (Russia).—Ordinary adulteration, imprisonment up to one month, with seizure of goods, or fine of 100 roubles (12*l.* 10*s.*).

Palermo (Italy).—Ordinary adulteration, fine or imprisonment.

Pernambuco (S. America).—Ordinary adulteration, fine and imprisonment.

Persia.—See Teheran.

Ponta Delgada.—See Azores.

Prussia.—See Memel.

Puerto Rico (W. Indies).—Adulteration of bread, fish, or milk, fine of 25 dols., confiscation of goods.

Rhode Island (United States).—Ordinary adulteration, imprisonment up to six months, or fine to 200 dols.

Rio Grande (S. America).—Ordinary adulteration, fine or imprisonment from three to eight days; punishment doubled for second offence.

Russia.—See Odessa.

Savannah (United States).—See Georgia.

San Francisco.—See Cincinnati.

Smyrna (Turkey).—Ordinary adulteration, imprisonment from one week to two years, or fine of 1*l.* to 25*l.*

South America.—See Monte Video, &c.

St. Thomas (West Indies).—Ordinary adulteration, imprisonment from ten days with bread and water, to four years with hard labour.

Tangiers (Morocco).—Ordinary adulteration, fine, imprisonment, or bastinado.

Teheran (Persia).—Ordinary adulteration, bastinado.

Texas (United States).—Ordinary adulteration, fine from 25 to 500 dols.

Therapia (Turkey).—Ordinary adulteration, fine of 30 to 50 piastres.

Trebizond (Turkey).—Ordinary adulteration, admonition for first offence; fine one bishlick (11*d.*), second offence; fine 15 to 30 bishlicks, third offence; imprisonment from one to thirty days, fourth offence, with forfeit of license.

Trieste (Austria).—Ordinary adulteration, imprisonment up to six months.

Turin.—See Milan.

Turkey.—See Trebizond.

Venice (Italy).—Ordinary adulteration, forfeiture and fine for first offence; arrest and suspension of business for second offence.

Vermont (United States).—Adulterating medicine, imprisonment up to two years, or fine up to 400 dols.; adulterating liquors, imprisonment up to six months, or fine up to 300 dols.; adulterating provisions, imprisonment up to six months, or fine up to 300 dols. for each offence.

THE NEW ADULTERATION BILL.

IN the April number of the *Food Journal*, serious objection was taken to Mr. Muntz's new Adulteration Bill, and it was shown that the provisions of the Bill are no improvement on Mr. Scholefield's Act of 1860. It is true that in addition to the seller of an adulterated article, the actual adulterator is to be fined a sum not exceeding 50*l.*, if the magistrates hearing the case be disposed to be very severe; but most of the objectionable parts of Mr. Scholefield's Act are repeated in the present Bill, and it is evident that no increase of offences or penalties will either remedy or make amends for the fundamental defects of these measures.

Extraordinary fines may be imposed for certain offences, but certainly no amount of penalty will deter a man from committing an offence, when he is sure beforehand that with a shrewd lawyer at his back, he cannot be convicted, on account of the many loopholes provided for his escape. Now these Bills under discussion are full of such loopholes. Mr. Scholefield's Act does not fail in its definition of offences, nor in the amount of penalty to be imposed, but it lamentably fails in the machinery employed for bringing offenders to justice. Whilst providing for the appointment of analysts in towns, boroughs, and counties, it makes no provision that these analysts shall have anything to do; for so many difficulties are placed in the way of those wishing to have tested, with a view to a prosecution, the articles they purchase, that this Act has for eleven years remained a dead letter, and scarcely any prosecutions have taken place under it. Thus, the purchaser on the hearing of his case before the magistrates, has to prove to the satisfaction of the bench that the seller of the adulterated article, or his servant, had notice of his intention to have such article analysed, and also had an opportunity of accompanying the purchaser to the analyst, in order to secure the sample from being tampered with. In addition to the loss of time in making the purchase, and the expense and trouble in getting it analysed, the purchaser before obtaining a conviction, has to prove that the seller of the adulterated goods *knew* at the time of sale that they were adulterated, and if he do not prove all these things to the satisfaction of the court, judgment is given against him, and as a reward for all his trouble, he may have

the satisfaction of paying the costs. There are other anomalies equally as great as those just named, and it might have been considered likely that after eleven years' experience of the uselessness of this Act, Mr. Muntz would scrupulously have avoided its failings and adopted such machinery that his Bill, if passed, would prove of eminent service in suppressing adulteration.

Unfortunately Mr. Muntz imports into his Bill equally fatal clauses. Thus, for instance, before a conviction, it has to be proved in the case of the manufacturer selling adulterated goods, that *he either wilfully admixed* or *caused to be admixed* the poisonous or injurious ingredients, and in the case of a dealer, proof has still to be given that he *knew* such goods were adulterated at the time of sale.

Sufficient has been said to show that the difficulties in the way of obtaining a conviction are well nigh insurmountable; for it would be next to an impossibility to prove that a man wilfully adulterated his goods, or caused them to be adulterated, or that the vendor of adulterated articles was aware at the time of sale that his goods were adulterated. Equal difficulties would lie in the way of proving that the adulterants present were injurious to health or poisonous, and proof of this would be necessary, because no offence would have been committed if the adulterants of food and drink were harmless. Even if poisonous substances were the adulterants, the quantities actually present would, to a great extent, guide the magistrates in deciding whether such substances were hurtful or not, and the bench would in their decision on this point be doubtless guided, to a considerable extent, by scientific evidence, which is generally most conflicting. There is, therefore, every reason to believe that on account of the many points to be proved by the prosecutor, he would fail in obtaining a conviction, or if he were successful, his victory would be so dearly purchased, that for the future he would studiously avoid having anything to do with checking adulteration.

It would be far better for the public if private members would make no attempt at legislation on adulteration, if they can only bring forward measures so objectionable as those under discussion. The most good would be derived from well agitating the question till the country is prepared to take the matter in hand. The legislature would then be compelled to pass a sound measure, which would doubtless reduce adulteration to a minimum.

The Foreign Office Reports in this Journal afford abundant evidence that other countries are far before us in this matter, for most of the foreign governments exercise a paternal care over the interests of the people, and are careful to protect the weak against the powerful. The commercial interest may one day not be so

strongly represented in the House of Commons as it is now*, and then there will be some hope of a good Adulteration Act coming into force. The Government will then, doubtless, undertake the responsibility of appointing analysts, purchasers of samples, and public prosecutors. Government interference seems to be the only effectual remedy, and as Mr. Bruce has proposed to take under Government protection the adulteration of drink, he will surely not withhold the same help to protect the interests of helpless women and children, in the supply of pure food and drugs, as he affords to the drunkard.

That the adulteration of food, drink, and drugs requires to be suppressed, there is not the least doubt, and that the extent of such adulteration is well known to many members of the House of Commons, may be gathered from the following quotation from a report made by a Committee of the House in 1856 :—

By adulteration, "not only is the public health thus exposed to danger, and pecuniary fraud committed on the whole community, but the public morality is tainted, and the high commercial character of this country seriously lowered, both at home and in the eyes of foreign countries. Though happily very many refuse, under every temptation, to falsify the quality of their wares, there are, unfortunately, large numbers who, though reluctantly practising deception, yield to the pernicious contagion of example, or to the hard pressure of competition forced upon them by their less scrupulous neighbours."

Further comment is superfluous, and it is evident that the evil is so wide spread, that only Government legislation can remedy such a state of things.

We have had our attention called by a correspondent in Liverpool to an instance of wholesale trafficking in diseased sheep between Birkenhead and Llangollen. It appears that a butcher, named Goddard, purchased 175 sheep at Bromborough at 1s. 4d. a head, and though they were in a wretched condition, and infected with scab, he exposed them for sale in the Birkenhead slaughter-houses, and eventually sold them for 3s. a head to another butcher named Evans, who forwarded them by railway to a customer at Llangollen, of the name of Rogers. Three butchers, supposed to be respectable tradesmen, are thus found to be buying, sending by rail, and slaughtering sheep unfit for human food—and it is impossible to say what amount of danger has been disseminated during the transaction. It is satisfactory, however, to find that the stipendiary magistrate at Birkenhead did not give way to sentiment; but fined butcher No. 1 £100, butcher No. 2 a like sum, and the Llangollen butcher £150.

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* We have but faint hopes of such a Millennium.—[Ed. F. J.]

CAPELINS.

There may occasionally be seen in our shops small dried fishes sold under the name of Capelins, at such a price, however, as accords only with the idea of an article of luxury, not with that of a considerable article of food. The capelin is an article for which there is little demand, few being aware of its excellence, and the price is proportioned to this circumstance rather than to the cost at which it is procured, or might easily be procured. To many of our readers the name of the capelin has probably hitherto been unknown, and we think to do them a service in introducing it to their notice, and recommending to their attention a delicacy very suitable either for the breakfast or the supper table. The capelin (*Mallotus niger*) is a small fish of the family of *Salmonidæ*—the salmon and trout family. It is an inhabitant of the Arctic Ocean, being found in the most northern parts which have been visited by ships, and is a principal article of food of the Greenlanders and of the Laplanders who dwell upon the coast; it is also found on the coast of Iceland, and especially abounds upon those of Newfoundland, where it is much used as a bait for the cod-fishing. Shoals of capelins appear on the coasts of Newfoundland at certain seasons, particularly during the months of June and July, so vast and dense that the very colour of the sea is changed by them for leagues together, and they can easily be captured in any quantity that is desired, with no greater trouble than that of merely dipping a net into the water and taking it up. On the coast of Lapland, also, fishermen are often able to load a boat with capelins twice, or even a greater number of times in a day. Capelins are also not unfrequently carried on shore in great numbers by the tide and waves, and thrown in ridges on the beach.

The capelin, although belonging to the salmon and trout family, is strictly a sea-fish, and never enters rivers, nor even proceeds far up their estuaries. It appears to be like the herring, the pilchard, and the sprat, an ordinary inhabitant of deep water, and like them seeks the vicinity of the coast at particular seasons for the purpose of spawning. The shoals of capelins are always pursued by great numbers of cod, which prey upon them, and by gulls and other birds which also devour them in great numbers.

The capelin is a beautiful fish, in size and general appearance somewhat similar to the smelt, to which, indeed, it is nearly allied. It is of a slender but rounded form, tapering towards the tail, and also more abruptly towards the snout, which is sharp. The upper parts are of a darkish-green colour, the lower parts almost silvery-white. It has a peculiar but very delicate flavour, which it retains even when salted or dried. The capelins used for bait in the Newfoundland cod fishery are preserved by salting, but the Greenlanders and other inhabitants of the Arctic regions preserve them for winter food by drying them on the rocks. A rainy season, which prevents their being dried with rapidity, is often the cause of serious loss and failure of winter stores to these poor people.

The capelins brought to this country appear to have been preserved by a combination of the two processes of salting and drying. They are well worthy of a place amongst the most esteemed delicacies of the kind to which they belong. But it seems probable that the northern seas might readily be made to supply us with such abundance of them, that they might become a common and considerable article of food in this country, whilst new employment would thus be given to fishermen and others, and a new branch of commerce would spring up to the benefit of the inhabitants of the countries on the coasts of which the fish abounds, as well as of the consumers. We have seen capelins offered for sale at one shilling a pound, but we have also seen them sold in Greenock at fourpence a pound, and there can be no doubt that they could easily be brought to this country and sold at that price, or even less, with profit to the importers. It is only necessary that they should be known, and that a sufficient demand for them should be created to encourage speculation in this new branch of trade. We can hardly doubt that if any one were found ready to engage in it, and to take proper means of making known the merits of the article offered for sale—the price being, at the same time, as cheap as would be consistent with profit—an extensive demand would soon arise, and the enterprise would be successful.

J. Montgomery.

There are many of our towns, into the sanitary arrangements of which it is to be hoped that the new Act will infuse a very different atmosphere. Take, for instance, Newtown, a picturesque and thriving place in Montgomeryshire, where the last report of the Local Board of Health states that from one locality, which was most populous, masses of putrid matter, to the extent of 30 or 40 basketsful a day, were being taken away. And, in the face of this, the Board defeated a proposal to improve the drainage and scavengering of the town.

THE FOOD RESOURCES OF CEYLON.

Though the Island of Ceylon has been of late years frequently adverted to by portions of the press of the mother country, it was not until the appearance of the exhaustive work on the colony by the late Sir J. Emerson Tennent that much interest might be said to have been created in her regard.

Among the commercial classes the progress of the colony, however, has doubtless been duly noted, and as the island has the great advantage of an industrious and intelligent press, accurate and copious details of its financial and general progress were, from time to time, duly recorded, and found their way both to political circles and to the counting-houses of the merchants and bankers of the United Kingdom. An admirable yearly work, entitled "The Ceylon Handbook and Directory," is issued from the "Observer Press," and furnishes authentic data of the actual state of the colony. Until of late years there were in Ceylon few large native landed proprietors. In the dominion of the Kings of Kandy, which comprised the interior of the island, the occupiers of land were, in the majority of cases, tenants at will, who could be dispossessed by the fiat of the sovereign. Under a *régime* of this character, there was no inducement to accumulate property; on the contrary, indeed, a positive danger, for the possession of riches involved persecution. Although the religion of Buddha does not, like the Brahminical faith, recognize distinctions of caste, yet, as a social regulation, they were strictly observed. Lord Valentia, in his travels, speaks of a tailor whose love of finery led him to be married in a scarlet coat, and who was nearly killed at the church door by the Vellales, or high caste people, as a fit punishment for his presumption! At the present day, and under British rule, much of this intolerance has disappeared. Education of the younger portion of the population, and their evangelization, combined with that destroyer of caste, railroad travelling, may reasonably be expected, sooner or later, to put the finishing stroke to all its objectionable features.

In 1832, under the enlightened Government of the late Sir R. Wilmot Horton, compulsory labour, one of the worst and most oppressive taxes bequeathed to us by our predecessors in Ceylon,

was finally abolished. Temporary inconvenience occurred in the first instance, but that was overcome by the energetic action of the Government, and unmixed good has been the result. Under the government of one of its most energetic rulers, the late Sir H. G. Ward,* the subject of irrigation, with the view of augmenting the island food supply by the extended cultivation of rice, was brought forward, and the writer had the privilege of forming one of the Committee of the Island Legislative Council, appointed in the year 1856 by the Governor to draw up a report, on which to base a legislative enactment, with the view to facilitate the revival and enforcement of the ancient customs, regarding the irrigation and cultivation of paddy (rice) lands.

The committee were unanimously of opinion that it was highly important to provide some simple machinery for putting into action many of the old and highly useful customs of the country connected with irrigation of the paddy fields. On the regular supply and the proper distribution of water, the inhabitants are dependent for the supply of rice, which constitutes the chief article of their subsistence. These customs had, in many instances, fallen into disuse, owing to the absence of any local authority to enforce them, and to the inutility, to say the least, of attempting to obtain redress for their non-observance, through the instrumentality of the ordinary civil tribunals. What was wanted was, that means at once simple, expeditious, and inexpensive be provided for compelling proprietors of paddy lands, irrigated from a common source, to contribute their proportion of labour towards the repair of tanks, water-courses, and dams, by means of which a whole tract of rice fields might be watered, but which works could not be performed except by the mutual co-operation, at the proper season, of *all* the cultivators. The same observations apply to other works, as, for instance, fencing the tracts of land during crop-time.

A legislative enactment followed; its principle was the allowing the proprietors of rice fields in any village or district to determine for themselves, by a majority of at least two-thirds of their number, upon the rules in regard to irrigation and cultivation to be observed and carried out in each district; the code agreed upon to be submitted for the approval of the Executive Government, and, if approved of, to become binding on all owners of rice lands in the district to which the rules contained in it were applicable. This ordinance has been since amended in several of its clauses,

* The son-in-law of Sir H. G. Ward, Mr. John Bailey, with indefatigable zeal and great ability, pressed the subject of irrigation on the attention of the local Government.

and, aided by liberal grants from the general revenue of the island, is producing most satisfactory results in increasing the food supplies, as will be shown in a future paper.

To demonstrate the great importance of the encouragement of local works of irrigation, it has only to be stated that at present Ceylon makes, in round numbers, an annual payment to India of upwards of 1,400,000*l.* for grain, chiefly rice, imported.

Sir Hercules Robinson, the present able Governor of Ceylon, believes that in four or five years time there will be an addition of some 200,000 acres to the existing rice lands of Ceylon; if this turns out to be the case, and the increase rateably continues, a large proportion will be released of the sum that she now pays for the importation of rice from India, and such addition to the land under rice cultivation, will, doubtless, have the effect of adding materially to the comfort and consequent contentment of the island population. At the Exhibition of 1862 the writer was requested by the Committee in Ceylon, appointed by the Governor of the colony, to act as their Commissioner and representative. The unfortunate shipwreck of a vessel in which a considerable portion of the contributions to the Ceylon Court had been shipped, operated, of course, unfavourably in presenting, at the world's fair a complete Ceylon collection for inspection; but there is reason to believe that the available display, specially in regard to plumbago, Cingalese fibres, etc., led to practical and advantageous results.

A colonial trade museum, established in the heart of the City of London, would have been, at the close of the Exhibition, a very useful measure; in it the samples and specimens of colonial products might have been deposited, to be increased, from time to time by fresh articles, which, by analysis and experiments, were found to be of practical value. Every facility for speedy reference would be thus afforded to the merchant, broker, and consumer.

As the late Dr. Forbes Royle stated:—"Trade museums are established to inform the manufacturer and merchant of the innumerable and, to them, useful substances, which nature everywhere produces, and man so frequently neglects."

As there is some agitation at the present moment for the appointment of a reporter on colonial products, the subject of a trade museum, say in Mincing-lane, will, it is to be hoped, be taken into consideration by the merchants and brokers of London, who have only to afford such an institution their support, and it would soon be in active working.

The railway between Colombo and Kandy, the capital of the interior, has been a great success. In a late speech of the Governor,

Sir H. Robinson, to the Legislative Council he says:—"The railway continues to flourish beyond the most sanguine expectations which were formed of it. The receipts between Colombo and Kandy this year will, it is now believed, reach 212,000*l.* The working expenses will be only about 36 per cent. of the receipts, or 76,000*l.*, to which, however, must be added an expenditure for additional station and other accommodation, properly belonging to the capital account, of 9,000*l.*—making a total probable expenditure of 85,000*l.* This will leave 69,000*l.* for general revenue, after paying the contribution of 58,000*l.* to the sinking fund. Taking, therefore, the cost of the 75 miles to Kandy in round numbers at 1,800,000*l.*, or 24,000*l.* a mile, the profits are at present over 7½ per cent. on the original outlay." The railway, while it has been of marked advantage to the *general* interests of the island, yet has of necessity acted injuriously in regard to that portion of the native population which was located along that magnificent high road between Kandy and Colombo, carried out by the genius of a former Governor, Sir E. Barnes. The populous and busy villages along this road have been ruined, but the progress of education, and the absolute necessity to work for existence sake, will, ultimately, cause the introduction of the iron horse to be heartily appreciated by *all* classes of the population.

Ceylon lies between 5°55 and 9°51 north latitude, and 79°41 and 81°54 east longitude; its extreme length from north to south is 266 miles, its greatest width 140 miles; its area is about 24,700 miles, or about 15,808,000 acres; and as she is possessed of every variety of climate, from the extreme humidity of the southern and central districts, where the rains are very frequent, to the dry and parching atmosphere of the northern province, where showers are almost unknown for nine months of the year, and with facilities of procuring a large supply of labour from the continent of India, she can boast of advantages unknown to any other colony under the British crown.

In a future paper it is proposed, as has been already mentioned, to touch upon the results of the measures that have been carried out in regard to irrigation, and to extend the island's food supply, and also to glance at the existing state and future prospects of the great staple products of Ceylon—coffee, cocoa-nut oil, and cinnamon.

E. Rawdon Power, F.R.G.S.

ON FASHION AND EXAMPLE IN FOOD.

The influence of what is in some cases called fashion, has rather excited attention to its anomalies and its eccentricities than to its real moral operation. The sum of three and sixpence laid out in some kind of goat's hair will give a servant girl a chignon which will persuade her that she has conformed to the fashion. Double the amount will give a young lady ribbon which shall comply with the same requirements. A few shillings' worth of embroidery will induce a woman—young or old—to expose her petticoat, which, under regulations of fashion, may remain concealed for twenty years. Time-honoured custom, consecrated by reasons of cleanliness and various other pretexts, for above a century forced the young women of England who had the ill fate to be in service, to hide their hair under close caps. It was fashion, which in our time emancipated the girls from a grinding tyranny of their task-mistresses.

After all, what is fashion but the combined expression of public opinion enforced by general sympathy? As under the designation of fashion it chiefly affects the lighter minded of women and of men, the sympathy more frequently acts in a trivial or hurtful direction than in any that is useful, but still it is an exertion of sympathy. There yet remains the question how far it may in some cases be made to operate for good. The sway of fashion has not been all for idleness and extravagance. We have been emancipated from gold lace, velvets, and satins for men—an enormous burden on our grandfathers; from swords, from swearing, and from much drinking. Can we get more? For a great deal of the good we have obtained we are indebted to a once powerful body, the Society of Friends, which leavened the mass by steadfast adherence to sound moral principles, and which afforded an external model for an organisation which immediately affected the shopkeeping and working-classes, that of the Methodists.

If we could utilise fashion in dealing with our food, we might do some good. At present the only movement on that subject is that of the temperance societies. If we could induce co-operation in food consumption, so should we directly and indirectly influence production and importation. The subject is one not unworthy of thought, for improved consumption means such economy as would provide food for many thousands of our people; and as this is to

be effected by very minute individual efforts, so must the aggregate be attained by general action of the community.

If among those classes, whose example is looked at and imitated by the rest, some fixity of principle could be insured as to the use of food, it would undoubtedly operate in the fulness of time on millions. The religious practices of the Hebrews and the Mussulmans teach good lessons on many points. No Mussulman, rich or poor, will do what many of us do here—throw a few crumbs of bread in the fire. He cannot do it. Bread is the gift of God. It may not be destroyed, and if no good to us or to our brother-men, it can be saved and given to the birds that fly around us. This teaching, which the child early takes and cannot forget, becomes a practical lesson in charity to our fellow-men—to give, at all events, what we can spare, and in charity to all the creatures of God. It is the food of God which is given to the sparrows, God's creatures; it is to the beasts of burden, the creatures of God, that mercy is shown as such. The lesson travels round, and comes back again. The porter is a man with a burden in the narrow and crowded streets of the Eastern city: the great man and the poor make way for the burdened man. It is the rich European who expects the porter, requiring the utmost forbearance under a heavy burden, to turn from the way for his convenience.

Indeed, no good and right feeling can be cultivated but what will yield good profit on the field where the seed is sown; but seeds are blown and borne by the winds to fertilize elsewhere, and the seeds of good principles are fruitful in many ways. This consideration may be an apology, if one were wanted, for turning attention to what in our common practice we regard so little. In the matter of our daily food some is left on our plates, some goes into the fire, some into the grease-pot and to a marine-store dealer, and some into the dusthole. Now it is true that we have the prerogative to do this, for the food is our own, and we have paid for it. We have paid the baker and the butcher, but we have not paid the Maker of the food, and can give no money to Him. Of Him we have only a right to obtain for our own wants with due regard to the rights of our neighbours.

The trifling practice of waste is simply a matter of want of thought, except so far as it is considered respectable, and according to the code of servants, not miserly and mean, to leave something on a plate. It is accordingly no exercise of fixity of principle, no determination on moral grounds. Indeed, so far as it is canvassed, there are floating elements of morals, floating in the social atmosphere like gossamer: "Give us this day our daily bread;" "Waste

not, want not," and many such. These mottos are carved at some expense in wood for bread plates, but they are not engraved on the minds of masters and servants, even in many households, where the mistress is economical.

If, then, any man, regardless of fashion, will set the fashion, not to waste food, he will be the man to make one blade of grass the more. It is not necessary to grow a blade of grass more, for we may do as much in saving a blade which was grown to be wasted. Thirty years ago every beast and sheep eaten in London had part of his flesh grown twice over, once for nothing, once for food, because, as the cattle were driven to London, so much flesh was lost, which had to be made up with as much green food. The railways now save this, and in this way probably give us more food than was grown on the land which they have taken from agriculture. If then a man in his own house sets to work to save food, he will put in motion an engine of vast efficiency. He may save only a few grains, but his servants will go into other houses, and carry out the like work, and the effects will spread.

Many a man will naturally and surely say, "I am careful; I have not yet wasted, and therefore cannot save bread or meat." Still he may find out the way of contributing to the result. At the present time our whole people are eating wheaten bread, and therefore the great burden of food falls on wheat. If wheat is scarce, it becomes dear, because no substitutes are consumed. Here comes a case:—Maize is an article of food, used by others, which we do not use; yet our brethren in New England are fond of it, and they have the choice of wheat. It is from the want of habit and practice of using maize that the population do not resort to it; but if maize were brought sometimes into the variety of a well-to-do house, servants would learn how to deal with it, and they would use it in other houses and in their own when they marry.

Fish is an article not so much used as it might be. It will, however, be said that fish is duly honoured, for it figures at every set dinner party. True, but it is the expensive turbot or salmon, and the penalty for this is that fish is banished for days. It is the avoidance of exclusive employment of expensive fish, turbot, salmon, etc., and the occasional employment of cheaper and good fish, which would have its effect. There is many a good household, it is true, where mackerel and herrings are admitted as a daily meal, but some people are afraid of fish at six a shilling. As to sprats, who would eat sprats? They can be got at a penny a plateful, and are as fine as sardines. The general effect is, that cheap fish is treated or looked upon as poor food, and by the

working-classes consigned to the very poor. Such is the caprice of fashion, however, that a red-herring may come in for breakfast anywhere.

Preserved meat, again, would be greatly brought into use, if, as done by some, it was more employed as an article of diet in the better houses, and its adoption would liberate so much fresh meat or recently salted meat for general consumption. For any article to become generally adopted for food, persons must know how to deal with it. People, who are fond of representing the English as barbarians in cookery, because they do not choose to use the same variety of cooking as the French, do not care to observe that there are many processes recorded in the cookery-books which are available, but which few care to adopt. There is a convenience in a simple system of cookery, which is an improvement, and not a going back, and which has led to the exclusion from our gardens of many herbs and vegetables formerly cultivated. Still, from time to time, the supply requires to be recruited with some new article, and this, as said, can only be done under training. Any one who teaches a servant to open a tin of preserved meat, and make soup of it, does a great good to the community, because, as before remarked, servants who learn a new art, go forth to teach rich and poor.

There are many things which can be adopted, to the benefit of the labouring classes, who are by necessity restricted to few articles of food. The haricot bean, for example, may be said to be excluded from this country.

All these opportunities of exertion may truly be called effects of co-operation, and they lie within the means of individuals. Without pursuing the subject in detail, it will so readily suggest itself, that very extensive results would be obtained by general action in many directions. Diminished use of beer and spirits would liberate grain, and the substitution of mineral oils for animal and vegetable oils would also operate usefully. Even as to garments, it may in time become a question how far flax and cotton grown on arable land are to be favoured by a State as against woollen and silk. Here, however, in some countries another consideration comes in, and that is, the circumstance that cotton can be grown as a summer crop, when grain is not available. Thus extending our consideration from our own to other countries, as our own knowledge enlarges, so do our sympathies.

Hyde Clarke.

MEAT FROM PARAGUAY.

The disastrous war in Paraguay being now at an end, we are led to enquire with those who take interest in the welfare of that unhappy country, what means are there of rendering its productions acceptable to English consumers of food? On the 19th of February, 1868, a paper was read before the Society of Arts, by Mr. Wentworth Lascelles Scott, "On the Supply of Animal Food to Great Britain, and the Means proposed for increasing it." Not the least pertinent idea of that paper was embodied in a question proposed by its author for consideration of the Society, namely, "What experiments, upon a practical scale, should be instituted in order to determine the best method of applying the bisulphite of lime process to the importation of meat, from Australia, South America, and elsewhere, in a sound and wholesome condition?" Mr. T. J. Hutchinson, late H.M. Consul at Rosario, Argentine Republic, now Consul at Callao, has endeavoured to answer this question, and we shall proceed to give the substance of his argument, which we shall supplement by some observations of our own, on the quality of the meat, which under the peculiar chemical conditions described by him, has been introduced into England.

The experiments which many have made during the last few years to import live cattle from the Argentine Provinces to England, have proved total and entire failures. The attempt made last year to bring live cattle from South America to England, proved an equal failure in the case of a cargo which was landed at Falmouth. In the Pacific Steam Navigation Company's mail steamer "Araucania," on board of which Consul Hutchinson left Monte Video on the 11th of October last, there were on board nine head of cattle for the ship's provisioning. They were plump when hoisted over the steamer's side at the last-mentioned port; were placed in an airy and sheltered position on the deck, as well as supplied with food of "alfalfa" (lucerne), and fresh water every day. Yet, before they had been many days on board, or more than 1,500 miles from the River Plate, they were nothing but hides, horns, and bones, with corresponding hoofs and tails. Mr. Hutchinson considers that the most important feature in the difficulty of bringing cattle alive from the River Plate, consists in their not being acclimated to a sea voyage and change of atmo-

sphere. Therefore, the loss of flesh, which must necessarily result, will stand in the way of success in a commercial point of view. It is, however, stated that the method of Messrs. Bailey and Son, of Wolverhampton—*i.e.*, by which bisulphite of lime is used as a preservative for meat, enables the consumers to receive meat in a fresh condition, and containing a large proportion of the chemical constituents of wholesome meat. This assertion is corroborated by a chemical analysis made by Mr. Wentworth Scott, F.C.S., which certainly shows that the Paraguay meat is nutritive and wholesome. It is much to be regretted that the precise chemical constituents of the meat are not given, and that the analysis in this respect cannot be compared with those which have been made by various partisans of the Liebig Company's, the Tooth's, and the Ramornie extracts of meat. The analyst states that he was able to make 2 per cent. of the weight of the raw beef into "*extractum carnis*," which was free from the peculiar flavour possessed by the ordinary varieties of Liebig's extract. It is, of course, hardly necessary to point out that the precise chemical value of such *extractum carnis* is undefined. The constituents of nearly all the varieties of *extractum carnis* have been misquoted by the advocates of rival and opposing methods, and where other varieties have been unsuccessful, we cannot expect that Mr. Scott's methods can be an exception to the rule. It is much to be regretted that nearly all the published descriptions by Thudichum, Druitt, Hutchinson, Dallas, Hassall, Miller, and Tanner, should be so very opposed to each other with respect to the matters of exact science and facts, which chemists should be able to settle once for all, finally and irrevocably. The whole literature of the controversy which has raged so many years on the chemical nature and economic value of *extractum carnis*, is not at all creditable to the science of the present day. Mr. Wentworth Scott declares that, unlike the generality of commercial antiseptics, the bisulphite of lime, as employed in Medlock and Bailey's patent process, communicates no unpleasant taste or appearance to meat, etc., impregnated therewith, and can therefore be safely used for the preservation of all kinds of animal food, however delicate their structure or flavour may be, while substances so treated, although they remain fresh and sweet for an almost indefinite period, retain their original wholesomeness and nutritive powers unimpaired. Mr. Scott has experimented very largely with this preservative, which, he finds, will instantly arrest the putrefactive, acetic, and other fermentations, it being absolutely fatal to all the lower forms of organic life, whether of animal or vegetable origin. He certifies it to

be the simplest, safest, and most effective means for the "preservation of animal substances that has yet been brought before the public; this patent being of decided utility to the wealthier classes, and a positive boon to the people at large, may, possibly at no very distant day, be the means of adding considerably to the food supplies of this country." We confess we cannot see in what way the bisulphite can be absolutely fatal "to all the lower forms of organic life," nor in what way some of the minute "germs of contagion" described by Dr. Burdon Sanderson, can be destroyed by it. However, we must not expect perfection in an analytical report.

The butchers in Newgate Market have adopted with success the rules which prescribe that carcasses, sides, quarters, and joints too large for convenient immersion may be well saturated with undiluted bisulphite, applied with a soft cloth or sponge. By this process eight sides of veal were kept sweet in Newgate Market on Wednesday, August 14, 1867, when the thermometer stood all day at 121 degs. in the sun, and a terrific storm of thunder and lightning raged all night. Immense quantities of other meat, not treated with the bisulphite, were completely spoiled by the following morning.

The experiments carried on in Trinidad are even more interesting than those in Paraguay. The invariable custom in Trinidad in regard to meat is that the animals are slaughtered after sunset *only*, and all the meat is sold off before nine o'clock. It must be cooked and eaten immediately, as any portions left become putrid by the evening, and have to be thrown away. On the 14th of December, at Trinidad, Mr. Fortuné immersed a joint of meat in undiluted bisulphite of zinc for twenty minutes, and hung it up, giving it a dip night and morning. The meat was put into the solution exactly 15 hours after the animal was killed. The joint weighed 9 lbs. and measured 18 in. by 7 in., and $3\frac{1}{2}$ in. thick, having a marrow-bone inside it $3\frac{1}{2}$ in. in length. The marrow remained perfect and sound, to the astonishment of all. The meat was put into the oven on the morning of the 21st inst., eaten on the same day by sixty persons, and pronounced sound and tender, undistinguishable from fresh meat, and without loss of weight, as proved by a certificate signed by some of those who tasted the meat, including the butcher who sold it. The thermometer marked 90 degs. in the shade.

Not the least interesting object for which the bisulphite is commercially applied is a specific against the foot and mouth disease in cattle. As a strong detergent it is doubtless here of great value.

The bisulphite of lime process is alleged to be serviceable for medical purposes, as a styptic, refrigerant, detergent, traumatic embrocation, febrifuge, deodorizer, and disinfectant. Whether in this respect it enjoys great advantages over the chlorides of lime may be left an open question. Disinfectants have been grouped by Mr. Simon into two great divisions. 1. Those of which carbolic acid and creosote are examples. 2. Those of which chloride of lime and of zinc (Burnett's fluid) are possibly the most familiar instances. These two systems do not combine well with each other, and neither combine with the valuable permanganate of potass (Condy's fluid). But the bisulphite process is different from all these, and certainly seems to possess the advantages of simplicity. Ale and porter brewers, sugar, starch, wine, and vinegar manufacturers, and all others interested in preventing saccharine running into acetous fermentation, have been also recommended to use the bisulphite, the *modus operandi* being to coat the interior of the cask all over with the bisulphite, then, without draining, fill the cask with ale, beer, porter, wine, vinegar, cider, or any other fermented liquor requiring to be kept sound. If the vats are rubbed over with it, it prevents the formation of mould or fungi, and keeps them sweet and wholesome.

Such are a few of the advantages which the bisulphite system is said to possess. We have little doubt but that, with other plans, it may prove a great means of partially utilising the enormous amount of nutritive, although at present unavailable, beef in South America; and as a detergent and deodorising agent, its use in the *abattoirs* at home cannot fail to be extremely beneficial.

C. Carter Blake, F.G.S.

Dr. Trench's report for 1870, on the health of Liverpool, though presenting the gratifying intelligence that the mortality of the town has decreased one per 1,000 during the year, offers some grave points for reflection, and none more than the following:—"In addition to overcrowding, the offence of permitting adult males and females not married to occupy the same room, comes under the notice of the inspector. There were 615 rooms thus indecently occupied by 923 males and 1,032 females, besides having also in their rooms 545 children between the ages of 5 and 13 years." The mischief of overcrowding is here forcibly brought before us, not only from its sanitary dangers, but from the want of self-respect and morality which is always engendered; and it is a hopeful sign that this particular evil is so vigorously recognised by the health authorities of Liverpool. The seizures of meat amounted to—beef, 113,296 lbs.; veal, 29,936 lbs.; mutton, 12,471 lbs; lamb, 571 lbs.; pork, 8,622 lbs.; poultry, 516 head; rabbits, 1,098 head; fish, 323,353 lbs.; shellfish, 253 bags; oysters, 13,696.

POPULAR FOOD ANALYSIS.

No. 12.—Bread (Concluded).

In bringing to a conclusion our investigations into the state of the bread supplied in London, and our remarks generally upon that important article of diet, we will glance for a moment at the use of baking-powders. A baking-powder is a combination of substances, so arranged as to cause the evolution of carbon dioxide gas when in contact with water; and all bread made by such means, therefore, belongs to the second class of unfermented breads mentioned in the last article. The first approach to the idea of introducing such substances into the art of bread-making was the use of hydrochloric acid and carbonate of soda. When these two substances are mixed with each other, the chlorine of the hydrochloric acid drives out the carbon dioxide (which comes off with effervescence), and forms chloride of sodium, usually known as common salt. At first sight this contrivance was an excellent one, because it produced in a single operation both the gas necessary to raise the bread and the salt to render it palatable. Unfortunately, however, commercial hydrochloric acid is contaminated with several metallic substances, and notably with arsenic, which of course renders the whole process open to serious objection. The modern baking-powders, as a rule, consist of tartaric acid and carbonate of soda, which also evolve the necessary gas when in contact with water, leaving behind a residue of tartrate of soda. In practice they are made by mixing together the two substances (first thoroughly dried and pounded) in nearly equal proportion, and then diluting the mixture thus made with any cheap material, such as flour of rice, so as to add to the bulk, and enable an apparently greater quantity of baking-powder to be sold for a given sum. Many food authorities have objected to the use of baking-powders thus made, on the ground that it behoves us to be careful how we add to the already sufficiently large amount of mineral matter which we naturally consume daily. Such an objection, though doubtless scientifically sound, does not appear to us to be of sufficient importance to constitute a serious obstacle to the partial employment of these powders, especially in the smaller domestic operations. Their utility and economy in pies, tarts, and breakfast rolls is undoubted, while the rapidity with which the operation can be conducted is of con-

siderable importance. Although, therefore, we should hesitate before we advised the whole bread of a family to be thus prepared, we should never object to the use of baking-powders for fancy articles, provided they were compounded in the above way. Unfortunately, however, we find by an examination of all the powders at present in the market, that some of the manufacturers are guilty of the addition of alum in considerable quantity. This has the effect of causing our domestic authorities to be accessories to bread adulteration, and therefore cannot be too strongly condemned. It is bad enough to deal with a baker who artificially whitens his bread, without having the same trick played with our pastry.

We are sorry that the existing state of the law prevents us from exposing by name the few manufacturers who indulge in this addition, but we will gladly give our analysis of any particular sample on being requested to do so by any manufacturer who is conscious of the freedom of his article from this admixture, as we did some months ago in the case of cocoas.

The weight of medical testimony against the addition of alum to bread is very great, and we may cite in conclusion the following opinions delivered before the House of Commons Committee on Adulterations on this subject. Dr. Carpenter, Professor of Medical Jurisprudence at the University of London, stated "that alum in bread was extremely injurious." Dr. A. Normandy stated that in eating inferior or mixed bread, made to look white and good by the use of alum, the poor man "not only loses the nourishment of good bread, but gets an enfeebled digestion, and therefore an inferior power of performing work, and a debased condition of health." Mr. Rogers stated that "even the smallest quantity is injurious; a person eating a pound of bread a day, would eat eight grains of alum with the bread containing the minimum quantity. Great gastric irritation would be produced. To young children it would be especially injurious. The very general disease in the nature of irritation about the stomach is probably to be traced to the bread that is used. The minimum of 8 grains to the 4 lbs. loaf would have a pernicious effect on delicate persons." The dangers of alum in bread are also very fully and clearly described in the report made by Dr. Septimus Gibbon, Medical Officer of Health for the Board of Works for the Holborn District, for the year 1857. He states "that its effect is to confine the bowels, and subsequently to produce alternations of that and the contrary, and finally ulceration."

Since our last paper the *Journal* collectors have been at work in

the East of London, and have forwarded twenty samples for examination, drawn from the poorest districts. The following is the result of their analysis :—

No.	Copper.	Alum.	No.	Copper.	Alum.
1	none.	none.	11	none.	none.
2	,,	,,	12	,,	,,
3	,,	,,	13	,,	44 grains.
4	,,	,,	14	,,	7·4 grains.
5	,,	,,	15	,,	none.
6	,,	,,	16	trace.	none.
7	,,	,,	17	none.	,,
8	,,	22 grains.	18	,,	24·5 grains.
9	,,	none.	19	,,	24·5 grains.
10	,,	9·8 grains.	20	,,	19·6 grains.

These results are the most encouraging which we have yet had, for only *one* contained a trace of copper, and but *seven* contained alum. An important point is also proved by this analysis, viz., that the bread of the poor is not so much adulterated as that sold in the richer quarters.

In the north and south-west of London the bread is very much in the same state as the west; but as we do not wish to weary our readers by any more detailed analyses, it will suffice to say that the *total state of London bread* calculated from all the postal districts is found to be :—

Pure Bread	52 per cent.
Alumed	33 ,,
Coppered	15 ,,
	100

Or in plain language, if a man go out to buy bread in the metropolis of this well governed and civilised nation, the chances are about equal whether he can get a pure article or not! But he may comfort himself with the idea that should he alight upon a bad loaf, it is still two to one that he is not scientifically medicated with copper, but only becomes a sort of civilised clay-eater. Moral suasion is useless with enterprising sophisticators, and it is only by severe repressive measures that they can be taught to believe in the well-known advice of the author of "The Apprentice"—

> "Be timely wise: for, oh! be sure of this:
> A shop, with virtue, is the height of bliss."

J. Muter, Ph.D.

INDIAN TEA.

No. 2.—Merits and Defects of the Chief Tea Districts.

Eastern Bengal has long been pronounced the most favourable province in India for the luxuriant growth of the tea shrub. There we find a hot, moist climate, where the thermometer in the shade rarely indicates an excess of 95, and scarcely ever drops below 50 deg. Fahr.; where the annual rainfall is from 100 to 130 in.; where there is never any long-continued drought, but where showers are frequent all the year round; where the nights are unwholesome with heavy dews, and the mornings obscured by fogs; where the sun pours down its fervent rays through an atmosphere free indeed from dust, but deadly with malaria; where, if at no time a breath of scorching wind is felt, the panting European is never refreshed by a cooling zephyr; where, in short, the climate promotes the most luxuriant vegetation, but is fatal to all except the most robust animal life. Such are the prominent characteristics of Upper Assam, a region in which the largest tea crops per acre have hitherto been yielded, but which suffers from a paucity of available and indigenous labour. In order to overcome the difficulty, various emigration schemes have been tried, but from malaria and other causes have met with only limited success. The Government of India has been blamed for its supineness in the matter generally, and for undue interference when it did act; yet it must be allowed that all legislation to assist and control labourers migrating from over-populated to sparsely inhabited districts, if only apparently to the detriment of employers, is beset with difficulties. On many points, however, the executive, anxious to protect the coolie, promulgated regulations highly vexatious and altogether obnoxious to the planters, which failed to afford the protection aimed at; so that, what with the demand for labour, which was continually in excess of the supply; the high price of conveyance; Government competition for workmen to execute railway and other engineering operations; the emigration tax; loss by desertion, sickness, and death; by the enforced supply of the coolies, with rice at absurdly low rates; by gross laziness and the powerless condition of the planters to compel labour and punish malingering, every able-bodied and willing workman cost his master little under 24*s.* per month. At this point the reader

will naturally ask, could not machinery have been introduced in substitution of, or supplemental to scarce and dear manual labour? The reply to this query will be found in a subsequent paper. Meanwhile the disadvantages alluded to, which confronted the tea planters in Upper Assam at every step, were so formidable, that in some instances estates, or considerable portions of them, had to be abandoned, as, although the soil was rich it was usually marshy, and its insalubrity repelled the cultivators whom its fertility attracted. It was found, too, that the cost of the finished tea on the spot reached about 1*s.* 3⅜*d.*; intermediate charges and expenses up to the period of sale amounted to 4⅛*d.*, making the entire outlay 1*s.* 7½*d.* per lb. Sold in London, it usually realized an average of 1*s.* 11½*d.*, showing an apparent gross profit of 4*d.* per lb., or probably a net return of seven per cent.; an altogether inadequate remuneration for an enterprise attended with such anxiety, and allied to so much risk.

Were the growth and preparation of tea the only forms of industry ever likely to benefit Assam, there might be a misgiving as to the ultimate commercial result in the upper district. But glancing over the whole magnificent area of 34,345 square miles, most of which is a rich, well-wooded, alluvial plain, are we not impelled to inquire:—Does this noble domain contain within itself no other germs of wealth than tea; do its hills conceal no mineral treasures; are its forests only fit for the charcoal-burner? The answer is, that it revels in unbounded although undeveloped opulence. This consists in rice, cotton, coffee, sugar-cane, India-rubber, betel nuts, palms, mustard, opium, gum-copal, musk, coal, petroleum, amber, ivory, gold-dust, silver, iron, lead, and salt; the skilful collection of which will sooner or later furnish the means to drain and embank the rich valley, and thus by controlling the erratic wanderings of the Brahmapootra, render the climate less inimical to human life.

Possessing a better climate for human existence, although less favourable to luxuriant vegetation, the commercial results of tea enterprise in Central and Lower Assam have been on the whole more favourable than in the upper district. The yield of tea is estimated at eighteen per cent. less, but as the cost of production, owing to a copious and cheap supply of native labour, is much under that of Upper Assam, the estimated profit per acre is believed to be about 32*s.* 6*d.* in favour of this locality. A recent Government report from Luckinpoor states that there are 228,634 acres of waste land still available for tea cultivation, and that wherever factories have been established, comfort and plenty have been provided.

It is to be regretted, however, that such official documents omit to mention prominently that part of the annual revenue consists of 143,500*l.* derived from the sale of opium to the labouring population. To the use of this noxious drug, the well-known curse of China, is to be attributed the indolence and degeneracy of the bulk of the natives of Bengal, a race whose physical organisation, even in the days of Warren Hastings, was feeble even to effeminacy. It acts by indirectly retarding the development of Assam, as, but for the opportunities which exist of purchasing opium at a cheap rate in the lower district, the upper, with its offers of high wages, might in time overcome the scruples and fears of the coolies to migrate there. Could the Indian Government be convinced of the enormity of the moral delinquency which it commits by sanctioning the growth and sale of this poison, or at least be induced to place some strict check on the iniquitous traffic, there would be less temptation offered to the sensual Bengalees to revel in cheap narcotic intoxication at home. Under better auspices, and emancipated from the thraldom of a degrading vice rendered too expensive for ordinary indulgence, the coolies might then cheerfully flock into Upper Assam and to other districts where their labour happened to be in demand, and where, with their comparatively limited wants, they could soon acquire a competency. When such a desirable state of things occurs, and the interests of tea companies are heartily promoted by Government, the alluring prospect at one time so dazzling to planters in Upper Assam of supplying Thibet and the revolted Mohammedan districts on the north-west frontiers of China with tea may be realized. Hitherto Chinese influence in Thibet has been paramount, the Pekin authorities having annually subsidised the five chief Lama monasteries, so that the Lama government prohibits any native from purchasing Assam tea.

Notwithstanding all the disadvantages to which allusion has just been made, as well as those stated in a former article, the vitality of tea cultivation and preparation has been so tenacious that at present there are, according to Dr. Archibald Campbell, 290 gardens containing 29,350 acres, mostly under crop, which produced last year 435,772 lbs. of tea. Assam, as a whole, is improving, inasmuch as there is now a superior class of managers in charge of the gardens, who have not only learned their duties from a very rough experience, but who are alive to the fact that to secure success in such an enterprise, science must go hand in hand with integrity and economy.

William Cochran.

[to be continued.]

LIVING ABROAD.

Part III.

In two former articles I have endeavoured to lay before my readers as concise an account as possible of the expenses incurred by persons moving in good society throughout the Continent, and I now propose to conclude the subject with a few brief remarks on the cost of living in the other hemisphere. It is true that up to the present time people do not run off to Buenos Ayres or Chili with quite the same rapidity as they do to Dresden or Brussels, but the time seems fast coming when the length of such a journey will be a matter of secondary importance, so rapid are the communications and so well arranged the modes of transit. But even as it is, a vast number of Englishmen are obliged to seek their fortunes on far distant shores, and to them the cost of living is a point of strong interest. To take the case of Buenos Ayres first of all, we find that he information given about the European capitals applies even more strongly to the South American towns, and with this disadvantage, that with a large necessary expenditure, the return in the way of comfort or pleasure is probably at a minimum. Here is the experience of two English gentlemen living together, and although it is true that they are both in the diplomatic service, their expenses may stand for almost any Englishman resident in Buenos Ayres in an unofficial capacity. The monthly expenses are as follows:—

House rent	£26	0	0
Kitchen expenses	32	0	0
Light and fuel (average)	4	8	0
Washing	4	16	0
Wages (2 servants)	10	16	0

The house for which such a handsome rent is charged is so small, that it is only just large enough for its inmates. The meals are but two daily, and consist of *breakfast*—one dish of meat, one of eggs or vegetables, tea or coffee; *dinner*—soup, one dish of meat, one of vegetables, a sweet dish or fruit, *vin ordinaire*. The gas is dear and bad, and coals are 5*l*. a ton. Dress is as much thought of as in Paris or London. The tariff price of a cab is 4*s*. 2*d*. a fare, or 8*s*. 4*d*. an hour; the distances are very great, and the streets, after rain, are impassable on foot. The keep of a horse comes to at least 5*l*. a month. Another estimate furnished by a gentleman

who has lived in Buenos Ayres since 1850, shows that since that year house rent has increased threefold—the only corresponding advantage being, that the houses are better furnished. The price of meat and vegetables has doubled, as have also domestic wages. The cost of furnishing is also double, which may be explained by the fact that almost everybody gets European furniture. Even the price of a theatre ticket and other entertainments has doubled. These first changes may be dated from the year 1852, after the fall of Rosa, when the Argentine Confederation began to improve very rapidly in its prospects, and the luxury of the people to increase. In those times 1,000*l.* a year was considered a good income on which a family could make a respectable appearance, but now-a-days a married couple (without encumbrance), with only that amount of income, have to screw at every point and debar themselves from society to make both ends meet. A single man with 500*l.* a year was then well off, now this sum is genteel pauperdom. The proverb "Lightly come, lightly go," seems to be applicable to Buenos Ayres, for it is stated that while the outgoings are excessively heavy, the facility of making money is equally great, and there appears to be an incredible amount of wealth all through the city.

In Rio Janeiro expenses generally have trebled within the last twenty years; and curiously enough, the cause of change is ascribed to a great epidemic of yellow fever, which frightened half the residents from out of the city proper. Even clerks in the merchants' offices contracted the habit of living out of town, and this appeared to bring about a rapid rise of prices. The city, too, was paved and otherwise improved, and carriages and horses came more into vogue, all of which conduced to greater expenditure. Within the last few years there has been a considerable increase in the use of ice and also of tobacco. The following is the comparative rate of living for 1850 and 1869:—

	1850.	1869.
Fresh Meat, per lb.	200 reis	320 to 380 reis.
Mutton, per pound	480 to 560 reis	700 to 800 reis.
Fowls, each	1,200 reis	2 milreis (=2,000 reis).
Male servant, per month	16 milreis	30 milreis.
Cook, per month	20 milreis	40 to 50 milreis.
Carriage hire, per month	250 milreis	500 milreis.
Horse hire, per month	50 milreis	60 to 70 milreis.
House rent, per month	80 to 100 milreis	250 to 300 milreis.

A milreis equals 1,000 reis, and is worth about 2*s.* 3d. of English money. The whole style of living in Rio has become much more luxurious and expensive, and 2,000*l.* per annum there is equivalent to about 1,000*l.* in this country.

One would have thought that a place like Guatemala in Central America would have been primitive enough not to feel these changes, but we find the same state of things prevalent here as in more favoured cities. House rent is double, and in some cases treble, what it was in 1850. Beef has remained stationary in price, while mutton and vegetables have doubled, and all other necessaries have risen from 25 to 50 per cent.

The city of Bogota, in South American Columbia, shows the following scale of increase :—

Household expenses	75 per cent.
House rent	75 ,,
Furniture	50 ,,
Wages	60 ,,
Horsekeep	75 ,,

Living at Washington, according to the statements of a banker in that city, is 50 per cent. more than it was in 1850. House rent is from 50 to 100 per cent. higher; furniture and carriages, 50 per cent. higher; horsekeep, 75 per cent. higher.

Go where we will, therefore, from London, the centre of civilisation, to the remotest cities upon the earth, and we shall find that the struggle to live is universally harder than it was, and that prices unfortunately, to use a commercial phrase, appear to "harden" rather than otherwise. To enter into all the causes of this increase would necessitate the ready calculations of a financial economist, though some of the most obvious may be mentioned, such as the general taste for luxury that now pervades the world. In this country its growth is but too rapid. We see so many things that we fancy that we must have them, and cannot do without them; and this engenders a habit of competing with each other in our appearance before the world, regardless of the fact that, generally speaking, our money has not increased in proportion to our tastes. If a census could be taken of the families who lived within their incomes between the years 1850 and 1870, I fear that the balance for the latter year would be a very unfavourable one; and although it is true that a good many people seem to have an indefinite command of money, by far the greater proportion of English society is, to use a common though expressive idiom, "hard up."

PHILLIPS BEVAN.

COOKERY PAPERS.

No. II.—SOUP.

I SHALL avoid discussing those soups, preserved in tins, which are now, I believe, very generally used as an easy method of furnishing the dinner table with what has been well termed "the vestibule of the banquet." Extracts of meat, I may mention, are "more of vital restoratives than nutritious food," and therefore do not come under the denomination of soup. My province is simply to show what soup is, and to explain, I hope clearly, what it ought to be. To dilate upon the advantages of soup, as a variety of diet, I leave to those who have studied dietetics from a scientific point of view. It is, I think, much to be regretted that good soup is unknown in nine houses out of ten; for the wishy-washy, greasy liquid which ignorant cooks, who have no knowledge of the science of cookery, impose upon their employers, is not soup at all; and one might just as well imbibe the water in which the dishes of yesterday's dinner were washed. The unwilling guest is too often forced to partake of a nauseous and indigestible composition, which annoys the palate, and against which the stomach will revolt. How much better it would be to commence dinner with some plainly dressed but wholesome fish, or a thick soup which can be achieved by any tolerable cook; but to make a good clear soup requires experience and skill, and a certain amount of knowledge of the chemistry of gastronomy. A good clear soup is a *chef d'œuvre*, and is infallibly the work of a culinary artist of no mean order. Stock is the basis of all soups; it is the soul of cookery; and it is hardly to be expected that one with but a smattering of culinary knowledge (most cooks know less of cookery than anything else) should yet be able to understand its most vital principle. Thick soups are useful for luncheon; and when a substantial meal is required, they are better calculated to satisfy the appetite; whereas thin soups to a certain extent only excite it. Hence when other things are to follow, and it is not intended to choke off the guests at first, a clear soup tends to stimulate the appetite to further gastronomic delights, whilst a thick soup is calculated to cause repletion, and so to prevent the palate from enjoying those pleasures which the divine art of cookery, with a lavish hand, presents to its consideration.

The skilful amalgamation of materials, aided by a knowledge of the essential principles of culinary chemistry, constitutes a judicious combination of subtle essences and mysterious flavours, all evident but none predominating, an harmonious and delicate mixture of vegetable and animal juices, which the enraptured epicure denominates soup. The soups which are eaten abroad (even in the higher classes of society) are not nearly so highly flavoured, or so strong as those in which the English palate delights. We should term their soups, as a rule, too weak; they, on their part, think ours too strong; and the French cook, whose abilities are displayed for the benefit of English *bon vivants*, soon learns that, though we have almost adopted the style of the French cuisine in its entirety, we still prefer our own style of soup. Soup, then, to suit the English palate, should be strong. To effect this it is not desirable to use pungent condiments, but it should be strongly pregnant with the flavour of the meat. Any extra flavouring matter which may be required should be added sparingly and with judgment. The stock, the corner stone of the fabric, should be made of good fresh meat; the stock pot should be gradually heated to the boiling point, and vegetables, &c., added; it should be well skimmed, and cold water should be occasionally thrown in to facilitate the rising of the scum, as this process of skimming is essential to the making of good soup. The kind of meat used should be either leg or shin of beef; the meat should be cut off the bone, and the bone should be chopped. The stock pot should not be allowed to boil again, but should be gently simmered for five or six hours; and by this process the full flavour is extracted both from the meat and from the vegetables, and a highly nourishing and clear stock will be the result. Stock, too, should always be made the day before it is required to be used for soup, as the fat will, when cold, settle upon the top of it in cakes, which are very easily removed. Bones of fowls, game, rabbits, or meat trimmings may be used in addition to leg or shin of beef in the preparation of stock; but to make it for white soups it must necessarily be white, and so veal, fowl, and rabbit only are admissible in making white stock. I think that soup is worthy of occupying a high place in the scale of culinary education and a prominent position in the study of dietetics, when it is remembered that the essence of meat is rendered more palatable and digestible when mixed with other essences and flavours.

Soup, such as we are discussing, only appears in well-to-do families in this country; so, on the score of economy, there is no reason why it should not be strong; but abroad, in France, for instance, soup as a food is universal even amongst the poor, who,

from motives of economy, are naturally obliged to be content with a soup less powerfully flavoured with the juices of meat than the more wealthy classes; hence a weak, but always delicately-flavoured *potage* is considered essential to their habits at least once a day.

It is surely much to be regretted that there is nothing like the *pot-au-feu* of France in our domestic economy, and it has been well said that, at least in low life, we are coarse feeders. It is strange to notice how the national cuisine of the two nations partakes somewhat of their national characteristics. That of France is light and delicate; that of England solid, and somewhat coarse. We have partially adopted in our higher class soups the French style; but we have, we think, improved upon them, by making them stronger. With regard to soup considered as a diet suited to the poorer classes, our English cottage homes are totally ignorant as to the nature of it. The only form in which it is known to them is connected in their minds either with the workhouse, or with charity; in the form of soup kitchens in large towns, or the squire's lady at the hall, dispensing it as a bounty to half-starved villagers. Rarely is meat used for making soup amongst the poor; and it never occurs to the mistress of a small household to cook her joint in such a way that it produces a tureen of nourishing and palatable soup as well as a substantial *pièce de résistance* for the family dinner. Hence we see the soup question developed only in its two extremes—the very high-class and the very low-class soups; for the decoction with which the ignorant "cordon-bleu" in many houses favours her employers is not soup at all. We may say that soup is either very strong or else an unpretending mixture, which is nourishing and very good as a food for the poorer classes, but which should, more correctly speaking, be classed with Esau's mess of pottage, as it is invariably composed of peas, or some other farinaceous material, in a preponderating proportion; for Esau's luxurious diet (the mess of pottage which tempted the hungry Jacob), is universally supposed to have been a *bonne bouche* composed principally, if not entirely, of lentils. We do not here in England understand the grateful nature of the light economical soups which are so prevalent abroad; and one of our national failings is the neglect of the study of domestic economy. The medical adviser never prescribes soup for the delicate stomach of his patient, without suggesting Liebig's *extractum carnis;* although they (the medical men) acknowledge the superiority, as regards digestibility, of soup. Why is this? It is because of the almost universal ignorance which prevails on the subject. To make good strong soup, a certain amount of animal

matter is necessary, while Judgment must stand at the prow and Skill must hold the helm. Under these circumstances, a shin of beef weighing six or seven pounds will produce from four to five quarts of good strong soup. What I mean is, that soup is rich in animal substances in just such a proportion as animal matter is used in making it. Nothing comes from nothing; and if only a small quantity of meat is used in making stock, the soup will be rich in those materials which are derived from animal matter only in a small proportion. So far, I have considered what may be termed as the soup of high and middle-class life. In those cooking dépôts where soup is largely provided for the poor, as in Glasgow, Edinburgh, Liverpool, London, and elsewhere, the customers are not naturally fastidious in their tastes; and the main object to be held in view is to produce as large a quantity of food which shall contain as much nourishment as is possible for the price paid. "To make 100 rations of Scotch broth," Dr. E. Smith says, "were used, in these dépôts, the meat liquor from 7 lbs. of beef, and 1 lb. of well broken bones; $2\frac{3}{4}$ lbs. split peas; Scotch barley, $3\frac{1}{4}$ lbs.; carrots, $3\frac{1}{2}$ lbs.; turnips, $3\frac{1}{2}$ lbs.; cabbage and other green vegetables, $7\frac{1}{4}$ lbs.; salt, pepper, and dried herbs. To make 100 rations of soup, the meat liquor from 7 lbs. of beef, and 1 lb. of bones; split peas, 13 lbs.; carrots and Swede turnips, each $6\frac{2}{3}$ lbs.; onions, $5\frac{1}{2}$ lbs.; leeks, $\frac{1}{2}$ lb.; salt, pepper, and dried herbs." The amount of animal nutriment contained in a ration of such soup is, of course, almost infinitesimal, as the quantity of soup produced to furnish 100 rations would be about 50 quarts, and I do not think that its nourishing powers can be very great. It is, however, I have no doubt, "filling at the price."

To take a case in point at the other extreme. A culinary artist, who has written a well-known work on cookery, first gives directions to make stock with $2\frac{1}{2}$ pints of water to each pound of animal substance; and to make soup, to take 10 lbs. of meat and bone, and two hens, to which seven quarts of stock are to be added; so that allowing for a slight reduction in quantity during the process of simmering, whilst the stock first, and the soup afterwards, is being made, the candidate for culinary honours has to use 17 lbs. of meat and bone, and two hens, besides vegetables, &c., to make about six quarts of clear gravy soup.

A Cook.

ORIENTAL DIET.

Part II.

The cost of a Chinese workman's food, in the places before alluded to, and probably generally, is not, on an average, more than 4*d.* or 5*d.* a day; and if the science of dietetics may be trusted, this regimen is deficient both in flesh-making and heat-producing elements, rice and herbaceous vegetables forming the basis, with very insufficient proportions of meat and fish. According to the deductions of European chemists it must be admitted that, with the exception of the silk-weavers of Han-Kou, already referred to, the Chinese workmen do not eat enough or sufficiently rich food to compensate for the waste caused by hard work.

It is very difficult to make comparisons between the natures of different nations, in which climate, constitution, and habits should all be taken into account; but we may at any rate consider such evidence as is brought before us. In the first place, while the endurance of some Asiatics has often called forth the admiration of Europeans, there is little doubt that the general opinion is that they are not capable of the same amount of hard or continued labour that well-fed Europeans can perform; the evidence of disinterested observers, if it does not absolutely contradict that opinion, at any rate tends to qualify it in certain respects, and these qualifications are well deserving of attention.

The Lazarist missionaries of Pekin, who employ Chinese workmen, and who might therefore be expected to underrate, rather than otherwise, the capacities of those whom they have to direct, declare that the Chinese are capable of doing very nearly as much work in a given time as Europeans; at the same time they remark that the former frequently leave their work to drink tea and smoke. One of these French missionaries says that Chinese labourers are more robust than their western brethren, that they frequently lift weights and carry burthens that would overtax the power of Europeans (which we ought probably to translate Frenchmen, who certainly do not generally possess the same muscular power as Englishmen). This fact is attributed partly to the habits of the Chinese, who, not using the same machines and utensils as Europeans, are accustomed to great exertion of strength, which exercises and increases their muscular powers, the greater part of the loads being carried on men's shoulders or in wheelbarrows; it is only in

the northern provinces of China that the employment of carts, asses, and mules for transport is general. Everyone who visits China is struck by the number of coolies that he meets, the heavy loads that they carry, and the rapidity and dexterity with which the palanquin bearers trip along the narrow, ill-paved, and crowded streets of the towns, apparently careless of the burden they support. The way in which they carry loads suspended near the ground from the ends of an elastic bamboo placed across one shoulder, is at once sensible and convenient, as the bearer may relieve himself of his load instantly by merely bending his knee; the pole is, however, inferior to the yoke which rests on the two shoulders, an inferiority partly counterbalanced by the lightness and elasticity of the former.

Another instance of the muscular power of rice-fed nations is exhibited in the apparent ease with which Indian and Egyptian women carry heavy jars of water on their head; and in the little towns on the French coast of the Mediterranean, where the climate, as well as the origin and habits of the working-classes, are rather those of Asia than of Europe, women may constantly be seen with one huge jar of water on the head, a second held upon the hip, and very often a child supported on the other hip, or slung at the back, marching under a burning sun and over some of the worst paving, or apology for paving, in the world, with an erect and graceful carriage of the body that a city belle might envy.

The employment of Chinese labourers in the United States and elsewhere, has made the world acquainted with their capacities and conduct, and one of the largest works undertaken of late years, the construction of the Pacific and Atlantic Railway, supplies an example that must not be passed over. This great line was constructed by two companies, which rivalled each other so energetically that one of them, the Californian, performed at last the prodigious task of laying and fixing ten miles of rails in eleven hours. This company employed many thousands of Chinese labourers. The Chinese emigrants, of whom an average of 12,000 a year are brought from Hong-Kong to San Francisco by the steamers of the Pacific Company, are very distasteful to the lower classes of California, but they have completely gained the esteem of their employers. M. Lindan, who crossed the American continent by the new railway on his way home to Europe from Japan, and who has published an interesting account of his journey in the "*Revue des deux Mondes*," tells us that in California there is but one opinion concerning the Chinese, which is, that they are the best labourers that can possibly be employed on railway works; not only can they bear as much fatigue and do as much work as

Europeans, but they are conscientious, and appear to take a pleasure in their occupation, while, above all, their sobriety is exemplary. Though it was necessary to keep a sharp and constant watch over the American, Irish, and German labourers, the Chinese scarcely required a look from the managers and foremen; their task being set, they arranged amongst themselves to perform it in the best manner; they organised themselves in groups, with leaders, treasurers, and a regular commissariat, which the Europeans could not be brought to understand, but admitted that the result was admirable. The only dominant vice seemed to be that of gambling. The Irish and Americans were continually quarrelling and fighting, while only one fray is recorded of having occurred in the coolie camp; but this was serious. The Chinese were divided into two bodies, upon some mysterious question, and the result was several deaths, and a large number of wounded. It is humorously asserted that the Irish took to the Chinese rather more kindly in consequence of this affair, declaring that after all they were not quite such pagans as people said. The union of the lines of the two companies was effected by the laying of about 100 feet of rails with great ceremony, two squads of men, whites on the side of the Union company, and Chinese on the other, all specially dressed in workmen's costume for the occasion, advancing to fill up the gap in the iron road; they were all picked men, and performed their task in the most finished manner. The Chinese, although grave and silent, were especially alert, and were the object of general admiration, working, said an eye witness, just like jugglers.

Such evidence as this cannot be put aside as worthless, though certain allowances must of course be admitted. It may be said that men who emigrate are generally favourable specimens, in an animal sense at least, and that the Chinese in California, although living in their own fashion, could afford to feed better than at home; but, making all possible concessions, it must be admitted that it is extraordinary that races supported by such diet as that of the Chinese should exhibit almost, if not quite, as much actual strength and enduring force as the more substantially-fed Europeans and Americans.

What is it that compensates entirely, or in part, for the deficiency in azote and carbon? Is it the tea, or is it the sobriety?

G. W. Yapp.

BRANDY IN ITS RELATION TO TABLE WINES.

In a very valuable little work* upon the manufacture of table-wines, by the Visconde de Villa-Maior, Rector of the University of Coimbra, we have some observations upon this subject which appear deserving the attention of English wine consumers.

The question proposed for discussion by the Visconde is as follows:—"Is the addition of brandy *indispensable* or *useful* in the case of natural table-wines?"

On the one hand, many persons, he observes, are persuaded that wines of every description—at least those of *Portuguese* manufacture—will *not* stand carriage unless fortified with a strong dose of brandy. On the other hand, the prejudice against strongly alcoholic wines is daily increasing even in England, once the principal market for Portuguese wines.

He is not prepared to deny *in toto* the expediency of adding a modicum of brandy to ordinary wines, but personal experience has convinced him that when these wines have been made properly, and kept with due care, the addition is *not* essential to their durability—save in certain very exceptional cases.

The description of wine best adapted to the productive capabilities of the majority of Portuguese wine-farms, he considers to be a genuine, or, as it is generally said, a *natural*, undoctored wine—"the pure juice of the grape," to use a common expression—which is excellent for ordinary use, will stand carriage well, and should, with care and skill on the part of the growers, prove an important element in the development of the agricultural and commercial resources of the country. Wines of this class, he maintains, can be produced without the aid of brandy, in Portugal as elsewhere. Before entering further into the subject, it appears desirable to consider the advantages to be derived from the practice of "brandying," when restricted within proper limits. The point is very clearly argued in a little work upon French wines, published in 1864, by Baron Thenard. This writer's remarks M. de Villa-Maior considers to be equally applicable to Portuguese wines, and accordingly he quotes them, as follows:—

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* "De Vinificao para Vinhos Genuinos pelo Visconde de Villa-Maior." Lisbon. 1868. 8vo.

1. *The object of Brandying Wine.*—Many persons imagine that the object of adding brandy to wine is merely to increase the strength. But the process is far more complex in its effects, and this but one of the ends sought.

In reality, besides its direct and more obvious effect, the brandy produces others, less noticeable but more useful. It re-acts upon the other constituents of the wine, such as the acids, salts, colouring matter, and ferments, determining in a fusion the component principles of the wine, eliminating some which are over-abundant, facilitating the development of others which are defective by increasing their proportions.

2. *The utility of Brandy in sweetening over-acid Wines.*—We all know that over-acid wines are disagreeable to the taste and injurious to the stomach. Again, without being understood to assert that wines deficient in alcohol are always acid, we may lay it down as a general rule that very acid wines are always alcoholically weak. This defect may be remedied by the addition of brandy, the acidity being reduced proportionately with the amount of brandy added. Our palates will confirm the truth of this assertion, but a simple experiment will demonstrate it still more conclusively. Wine owes its acidity partly to free acids, which are present in very limited quantity, partly to a salt familiarly known as "cream of tartar," possessing a peculiar acid taste, which is in most cases so abundant as to produce a crystalline deposit upon the sides and bottom of the cask.

If we pour a little alcohol into water saturated with cream of tartar, we shall see that the water will turn thick and throw down a white sediment—the salt in question. If we add a second and stronger dose of alcohol to the same liquor, we shall find that the sediment is increased. In this way, with the addition of a sufficient quantity of alcohol, the whole of the cream of tartar may be precipitated, and the water entirely freed from acidity. If the experiment be repeated with a very acid wine in place of the aqueous solution of cream of tartar, the same phenomena will be manifested. Direct experiment proves that a wine holding naturally a proportion of 10 per cent. of alcohol is never unduly acid. Thus we see that brandy de-acidifies an over-acid wine by precipitating the excess of tartrate to which the said acidity is due.

3. *The action of Brandy on the free Acids.*—In respect of the free acids, the alcohol supplied in the process of "brandying" exerts a still more important effect, by transforming an essentially objectionable element into substances which afford some of the most agreeable and most highly-prized characteristics of wines.

Chemistry teaches us that acids have the property of combining with alcohol, and thereby forming certain substances known as "ethers." Now, ethers—those of vinous acids more especially—have a balsamic, and, in many cases a very delicate and peculiar flavour. That these ethers may be developed with suitable expedition at ordinary temperatures in any very dilute acid solution, it is requisite that alcohol should be present in sufficient quantity. In cases in which the effect is desired in the course of a few months, as with inferior wines, which, to save cost of cellarage, are to be consumed *new*, 10 per cent. will not be found too much. To secure this result, *i.e.*, the neutralisation of the acids and the development of the vinous ethers, in a weaker and very acid wine, it is necessary to add brandy, and to add it in the fermenting vat, so as to obtain the full benefit of what chemists call the *latent heat;* the increase of temperature by the evolution of the latter during fermentation being peculiarly favourable to the aforesaid processes.

From this point of view the employment of brandy appears designed to counteract an injurious principle in the wine, by transforming it into another substance, which imparts to the latter an agreeable flavour. Here the deductions of practical experience are in accordance with the theory of Bertholet, for the soundness of which the name of that eminent author is a sufficient guarantee.

4. *The effect of Brandy on the colour of Wines.* — Grapes, with the exception of a few sorts not much cultivated in Portugal, derive their colour from a certain colouring matter found in the husks only. This colouring principle, which is of a deep bluish purple, is soluble in alcohol, but *not* in the other constituents of wine. Consequently, supposing the same amount of colouring matter to be present in the grapes, the highest coloured wines will be found the most alcoholic. Still there are wines which are weak in alcohol, but nevertheless have a fine colour. But these in general are very acid. The inference is, therefore, that acids act a part in the colouring of wine, and this is in fact the case.

H. M. C.

(TO BE CONTINUED.)

ACCORDING to Herr Essig's statement, from one-third to two-thirds of the flour used in bread-making can be advantageously replaced by what he terms "Oberteig." It contains 6-7 per cent. coagulated albumen, 4-8 per cent. of starch, and 82-88 per cent. of beer wort. A little salt is added, and more yeast than ordinarily. The dough is made up with less stiffness and requires more kneading. The oven must not be too hot. The bread is moist and somewhat sticky, and the older the better; it keeps for a fortnight.

CANNIBALISM.

Some of the more savage tribes, both on the east and west coast of Africa, have from time to time acquired the ill-renown of cannibalism—whether with justice or not is still matter of dispute; but at least it cannot be disputed that the charge is of very ancient date, and has been often repeated. It must have been a current belief in Shakespeare's time, for he notes among the wonders told by Othello to Desdemona, in running through the story of his life, "the cannibals that each other eat, the anthropophagi and men whose heads do grow beneath their shoulders." These must refer to Africa as their birthplace. The new world is out of the question, for it had only recently been discovered, and could not have been the seat of events in the early life of an African prince, such as Othello, and the only place in the old world in which an African prince could be supposed to meet with such adventures was his own, his native land; and in truth, to the present day, that is still the country from which some of ourselves persist in looking for abnormalities. M. Du Chaillu has given us a nation of dwarfs, Livingstone a subterranean city and people; and popular credulity still holds overdue promises to pay of a nation with tails, and a white race in the heart of the African continent.

As regards cannibals, again, Bruce relates that in his time there was still alive a man of the name of Matthews, who was present at a banquet of human flesh on the west coast of Africa, to the north of Senegal. Snelgrave fixes the stigma on the kingdom of Dahomey, and says that although he did not actually see it, his not doing so was solely due to his having been so thoroughly sickened by the previous atrocities of the horrible customs of which the banquet was to be the appropriate wind-up, that he could stand it no longer, and was glad to escape from the dreadful scene.

Norris corroborates him, but still not from personal observation, and Stedman, in his narrative of Surinam, quotes, with an almost suspicious profusion of circumstantial details, the reports of the Africans: "I should not forget," he observes, "to mention that the Gango negroes are supposed to be anthropophagi, or cannibals, like the Caribbee Indians, instigated by habitual and implacable revenge. Among the rebels of this tribe, after the taking of Boucou, some pots were found on the fire with human flesh, which one of the officers had the curiosity to taste, and declared it not

inferior to some kinds of beef or pork. I have been since assured by a Mr. Vangills, an American, that having travelled for a great number of miles inland in Africa, he at length came to a place where human legs, arms, and thighs hung upon wooden shambles, and were exposed for sale like butcher's meat in Leadenhall Market."

This reads too like a chapter of Defoe for us not to go along with Dr. Winterbottom, who in 1803 published the best book that we yet have on the habits, customs, and country of the natives of Sierra Leone and its neighbourhood. In it he exposes the absurdity of some of these tales, and remarks upon the last that it is rendered still more suspicious by the negroes being said to have salted the flesh, a practice almost, if not wholly, unknown to them. They know how to dry and smoke flesh, but salting is a stage above them. The result at which he arrives is "that the horrid practice does not exist in the neighbourhood of Sierra Leone, nor for many hundred leagues along the coast to the northward and southward of that place; nor is there any tradition among the natives which can prove that it ever was the custom; on the contrary, they appear struck with horror when they are questioned individually on the subject, although at the same time they make no scruple of accusing other natives at a distance, and whom they hardly know by name, of cannibalism."

Probably he may be correct in this, so far as concerns the districts within a certain (perhaps a wide) range of Sierra Leone, but the testimony to the occasional indulgence in eating human flesh in the Eboe country, and further to the south, is too strong to be wholly discredited. Du Chaillu, for instance, asserts the following with a precision of detail derived only from personal observation and inquiry:—

"The next morning we moved off for the Fan village, and now I had the opportunity to satisfy myself as to a matter on which I had cherished some doubt before, viz., the cannibal practices of these people. I was satisfied but too soon. As we entered the town I perceived some bloody remains which looked to me to be human, but I passed on still incredulous. Presently we passed a woman who solved all doubt. She bore with her a piece of the thigh of a human body, just as we should go to market and carry thence a roast or steak. . . . . I was told by one of them afterwards that they had been busy dividing the body of a dead man, and that there was not enough for all. The *head*, I am told, is a *royalty*, being saved for the king."

Again; "Eating the bodies of persons who have died of sickness is a form of cannibalism of which I had never heard among any

people, so that I determined to inquire if it were indeed a general custom among the Fans, or merely an exceptional freak. They spoke without embarrassment about the whole matter, and I was informed that they constantly buy the dead of the Osheba tribe, who in return buy theirs. They also buy the dead of other families in their own tribes, and besides this, get the bodies of a great many slaves from the Mbichos and Mbondemos, for which they readily give ivory at the rate of a small tusk for a body"—and so on *passim*.

Other recent travellers confirm the statement, and Mr. W. C. Thomson, formerly, and for many years one of the United Presbyterian missionaries at old Calabar, now settled and practising as a physician in Liverpool, leans to the belief that it is true. He says in a letter to us:—"All flesh—human flesh, and that of the leopard or panther and the common vulture excepted—is edible in Calabar; indeed, some of the imported slaves, and, above all, those who come from the Eboe country, do not except even flesh of their human kind, and boast of the sweetness of the human hand, and have been known to have their flesh-pots extra busy and extra well filled when the bodies of decapitated criminals have become accessible to them."

There is one little piece of unconscious circumstantial evidence in this which weighs with me. I have great faith in unconscious circumstantial evidence, and the preference given to the human hand seems of that class. How could this be known, except from trial? and why should they fix upon the hand, except from experience? In the absence of actual experiment, one would have expected that they would just have been as likely to select some other portion as the best—the head, for example, which being the king's royalty, might naturally have been rather pitched upon as the most dainty. But the point of interest is that in all probability the hand is in reality the best eating, and that for a reason which the blacks could not know. We all know how like in personal appearance the paws of a bear are to the hands of a man, and the paws of the bear, like the pettitoes of a pig, are esteemed the greatest delicacy of that animal, both in Europe and in North America, but the negroes do not know this, for there are no bears in Africa proper—that is in Africa south of the Sahara, that desert being the proper dividing line between Europe and Africa, instead of the Mediterranean.

Human flesh therefore, I think, must be reckoned an occasional article of food among the more savage tribes of west Africa, when accidental circumstances give them a supply, and when they have an excuse for eating it—such as tradition, custom, enmity, or hunger.

A. Murray, F.L.S.

THE AIR OF TOWNS.

Part II.*

Putrefactive Contamination.—The air receives all the products of decomposition capable of assuming a gaseous state, and much solid matter that is so little different from it in specific gravity that the slightest motion of the atmosphere is sufficient to keep it diffused therein. The air of very few places is in a quiescent state. Gases mingle with it according to the well known law of diffusion; light particles prove its incessant motion. By the simple process of washing with water such matters may be separated. There is, however, a comparatively small amount in an immense volume of air. The great medium of suspension is a difficulty. It is very tenacious of these impurities, and though the method of separation is simply washing with water, the washing must be performed in a particular manner. A small amount of water is put into a large bottle and shaken violently for a short time with the air in the bottle. The air is then pumped out, and fresh air enters which is similarly washed with the water, the process being many times repeated. The violent agitation forces the water and air together, whilst it breaks the water up into spray, and so exposes a larger surface to act on the air. The constant repetition of washing new air with the one small portion of water causes a gradual accumulation of air impurities therein, till at length a concentrated solution of air contaminations is obtained. By these means we secure the *atmospheric dust* and all the polluting gaseous bodies. From a sanitary point of view, perhaps, the most important knowledge to be obtained by air washing is the amount of putrefactive products in the air. These are shown by the ammonia obtained in the washings. This ammonia is derived from two sources, and the amount from each can readily be estimated. One is known as *free* ammonia, the other as *albuminoid* ammonia. The first is obtained partly as produced from coal burning and from unorganised matter, the latter from such organic matter as may exist in the state of germs or likely to produce them. An estimate of the ammonia enables us to ascertain the condition of air, so far as decomposing matter is concerned, with unquestionable accuracy by means of an elegant method lately discovered by Mr. Wanklyn for the estimation of *albuminoid* ammonia in water. The

Continued from Vol. I., p. 481.

following are comparative tables. The amount found in the air at Inellan, a small place pleasantly situated on the banks of the Clyde, and free from contamination, is taken as 100.

Air—Ammonia.

RELATION TO INELLAN TAKEN AS 100.

Inellan	100
London	117
Underground Railway (Metropolitan)	138
Glasgow	159
A bedroom	194
Inside and outside of office	235
A midden	644

Air—Albuminoid Ammonia.

RELATION TO INELLAN TAKEN AS 100.

Inellan	100
London	116
A bedroom	173
Inside and outside of office	194
Glasgow	221
Underground Railway (Metropolitan)	271
A midden	302

Air—Total Ammonia.

RELATION TO INELLAN TAKEN AS 100.

Inellan	100
London	117
A bedroom	179
Glasgow	202
Inside and outside of office	205
Underground Railway (Metropolitan)	235
A midden	396

The effect on the atmosphere of a mass of impure matter is very distinguishable. Comparing the towns, we are again confronted with the superiority of London. In *total* ammonia Glasgow and Manchester are the same, though Manchester is put at a disadvantage, some being from rooms. That of Glasgow is all from the streets, and consequently is more reliable in a sanitary sense. The large amount of *albuminoid* (or germ matter) ammonia in Glasgow air is noticeable, particularly when the coldness of the time of examination is remembered.

By this same method of air washing we also obtain readily the contamination of the atmosphere by coal burning and by manufactures that evolve acid fumes. Coal burning contaminates the air with salt and sulphur acids. Many manufactures, such as alkali, glass, and copper works, pollute the air with muriatic acid gas (spirit of salt) and sulphuric acid (vitriol) independently of the products of the coal which they consume. The appended tables of comparative results represent the proportion of acid (free and com-

bined together). The amount found in Blackpool when the wind was blowing from off the land is taken as 100.

Air—Hydrochloric Acid.

RELATION TO BLACKPOOL TAKEN AS 100.

Blackpool	100
Buxton	247
Didsbury	277
London	320
Manchester	369
St. Helens	516
Underground Railway (Metropolitan)	974

Air—Sulphuric Acid.

RELATION TO BLACKPOOL TAKEN AS 100.

Blackpool	100
Didsbury	320
Buxton	345
London	361
St. Helens	468
Manchester	549
Underground Railway (Metropolitan)	1554

Air—Total Acid.

RELATION TO BLACKPOOL TAKEN AS 100.

Blackpool	100
London	289
Didsbury	315
Buxton	333
St. Helens	474
Manchester	527
Underground Railway (Metropolitan)	1483

Glasgow is not given. London stands well as compared with Manchester. The most of the coal is burnt in domestic fires which do not throw so much hydrochloric acid into the air as do furnaces. Probably also a stricter watch over the amount of smoke evolved from manufacturers is indicated. Manchester has many works burning large quantities of coal. St. Helens may be considered a huge chemical laboratory. In a future article we shall notice more fully acid pollution whilst considering rain.

G. Manley Hopwood.

The *Industrie Blätter* contains the description of a remarkably simple filtering apparatus. A tank is divided into two compartments by a wall made of wire gauze, two or three inches apart, stuffed with wool ("Scheerwolle,") obtainable at any woollen clothes manufacturory. The wool has to be washed out with soda before stuffing, but it matters not what colour it is. In order to prevent a rotting of the wool, it is well to boil it gently with some solution of iron. Wrapped in pieces of coarse linen, it can be easily washed. The turbid water is poured into one compartment of the tank, whence it filters into the other.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

POTATO SOUP À LA CRÊME.

Cleanse, peel, wash, and slice up about twenty large-sized potatoes. Put them into a stewpan with one large onion, and one head of celery, also sliced up; add 4 ounces of fresh butter, a little pepper, salt, and grated nutmeg; set them to simmer on a slow fire, stirring them occasionally, until they are nearly dissolved into a kind of purée. Then add three pints of good white *consommé*, and after allowing the potatoes to boil gently by the side of a moderate fire for half-an-hour, pass them through the tammy, and having removed the purée into a soup pot, add, if requisite, a little more *consommé*, and set the *purée* on the fire to boil gently by the side of the stove, in order to clarify it in the usual manner required for other *purées* of vegetables. Just before sending to table add a pint of boiling cream, a pat of fresh butter, and a little pounded sugar.

HOW TO COOK SALMON.

As soon as a salmon is killed, it ought to be crimped, by making incisions between the head and the tail, 2 inches wide and 1 inch deep. It should then be put in cold water (well-water if possible) for one hour, and placed in a fish-kettle, with as much cold water as will cover it, together with $\frac{1}{4}$ lb. of salt, and as much vinegar as will make the water slightly acid. As soon as the water is scalding hot (but not boiling), take it off and pour the water into a pan, and put it away in a cold place, leaving the fish in the strainer. Place the strainer with the fish upon it over the pan of hot fish-water, to cool together, where it should remain till the next day, when the fish should be placed again *in* the fish-kettle with the same water in which it was scalded; and when it is again warmed, it is done. *It must not boil.* When there is more dressed salmon than can be eaten, it is particularly good fried in batter. It should be slightly sprinkled with salt before the batter is added, and if there is any Granville sauce, a little of it put on the pieces of salmon under the batter is a great improvement.

ROAST LAMB.

CHARLES LAMB, in his "Essays of Elia," was eloquent on roast pig; and equally so is the *Nutritive Calendar* on roast lamb, which is now in full season. We are ready to forgive it for being insipid and difficult of digestion, on account of its succulence and tenderness. A fore-quarter of lamb roasted, is a dish not to be despised; especially if, having carefully kneaded a good sized piece of the best fresh butter with parsley, green onions, and fine herbs, chopped up and mixed together, and having formed a ball of the compound, you introduce it carefully under the smoking hot shoulder before it is carved. There results from this treatment a relish and an unctuosity of which the meat is naturally deficient. "If this seasoning is prepared by the dainty, cool hand of a young and pretty woman, so much the better," says our authority for the recipe.

NOTES OF THE MONTH.

Professor Gunning, of Amsterdam, writing to the *Medical Times*, mentions a grave evil which he has observed in relation to infants' feeding bottles. The portion which is generally made of caoutchouc absorbs a certain amount of milk, which speedily becomes offensive, and contaminates the fresh milk. The caoutchouc itself, too, is often mixed with zinc or white lead. It is curious to notice how soon after birth the destructive processes of artificial civilisation are commenced, lasting, with but little intermission, until man is laid in his grave.

Too Clever by Half.—A butcher at Newcastle, who has been summoned for selling diseased meat, has got off by the defence that the magistrates had only power to appoint two inspectors of provisions, whereas they had appointed four!

The beet-root industry is spreading fast, and is about to be extended to Ireland. Mr. Newnham, of Mallow, whose manufactory of preserved milk is so favourably known, is commencing the growth of beet-root on his estate. A company is also on the eve of formation in East Kent with the same object, the soil of that county being known to be well suited to beet-root.

A correspondent referring to a recipe given in a former number of the *Food Journal* (vol. i. p. 407), for scarlet fever disinfection, viz., blotting-paper saturated in dissolved saltpetre, and when dried, lighted and allowed to smoulder, states that the fumes of the same, when inhaled by the patient, has proved a most efficacious remedy in cases of severe asthma. The simplicity and cheapness of the medicine are strong points in its favour.

From the last report of the St. Patrick's Reformatory School, at Upton, in the county of Cork, just published, it appears that, out of its 213 inmates, no less than 114 are employed in agricultural labour upon the adjacent lands, and that such labour is found to be productive. The boys have seven hours of manual labour daily, and three of schooling. The total cost of provisions in the table of expenditure is put down at 1,556*l.* 11s. 4d., being at the rate of about 7*l.* 8s. 6d. per head. The following is given as the dietary:—*Breakfast:* Coffee on Sundays, Mondays, Tuesdays, Thursdays, and Fridays; rice on Wednesdays and Saturdays. *Dinner:* One pint of meat soup, 1½ lb. of potatoes, bread *ad libitum*. *Supper:* Tea on Sundays, Mondays, Tuesdays, Thursdays, and Fridays; oatmeal stirabout on Wednesdays and Saturdays. *On Sundays:* In addition to the meat soup, ½ lb. meat. *On Fridays or Abstinence Days:* Pea or vegetable soup is served instead of meat soup. The health of the inmates has been excellent, and the only two deaths that have occurred have arisen, the one from consumption, and the other from suppressed scarlatina. Being a Roman Catholic institution, an approximation is made to the old monastic rule in one respect, to use the words of the report:—"At meals silence is observed, while one of the boys reads aloud. At breakfast the Holy Scriptures are read; and at dinner and supper, instructive amusing books." The annual return of the farm attached to the school, comprising about 112 acres, has been very good during the last twelve months, and shows a great improvement in the quality and produce of the crop as compared with past years. This, the report tells us, "is mainly attributable to the great care bestowed on the operations of manuring, working, and cleaning, which it much requires, though the soil is reported to be in a fairly productive condition."

We are glad to see that the authorities of the county of Worcester are awake to the necessity of appointing an analyst for that county, and will proceed to elect one at the next Midsummer sessions. We trust—that whatever may be the result of the new Adulteration Prevention Act, which lies at present in the doubtful obscurity of a Parliamentary Committee—that the other midland counties will follow the good example of their Worcestershire neighbour.

It is mentioned in the *Times* that the effect of the recent cruise of a detached squadron round the world was found to be to stunt the physical development of the growing boys and to reduce the stamina of the men, the average weight of 364 of the latter who were weighed falling from 151·79 lb. to 145·94 lb. in the 17 months. It is to be observed that the health of the crews was remarkably good throughout. The number of sick on any passage was generally below 4 per cent.; the deaths, including accidents, were barely 1 per cent. The whole loss by deaths, invaliding, and persons left behind in hospital not invalided but unable to proceed with the squadron, was only 3·4 per cent. This result is attributed in great part to the excellence of the provisions sent out to meet the squadron at different places, especially the salt beef, preserved meat, and biscuit. Fresh meat, vegetables, and soft bread were issued when in harbour, and, when the weather would permit of its keeping good, two days' allowance of meat and vegetables was taken to sea. At Yokohama, Honolulu, and Bahia live bullocks for four or five days' consumption, with a larger quantity of vegetable, were also taken to sea, and issued after a few days' salt-meat rationing. In the "Liverpool," which may be taken as an example of the squadron generally, fresh meat was issued on 133 days, preserved meat on 94, and salt meat on 289 days; lime-juice was issued on 344 days. In severe weather chocolate was issued to men of the middle and morning watches, and was much appreciated by them; in fact, some men asked for and were allowed to take chocolate instead of their daily allowance of grog.

A most valuable paper was recently read by Dr. Druitt at the Association of Medical Officers of Health, on "Physical Education in Elementary Schools"—which every one interested in the new education movement should read. The author insists with righteous indignation on the necessity that exists for personal examination of each child, together with more systematic attention to the arrangement of the premises and the condition in which they are kept.

Respecting Essig's mode of bread-making, J. T. writes to the *Zeitschrift für Land-und-Forstwirthschaft* that an addition of flour of beans improves the article. He proposes mixing 50 lbs. of flour with 30 lbs. of "Oberteig" (see page 231), 20 lbs. of bean flour, 5 lbs. of leaven, and 1 oz. of bicarbonate of soda. It requires a good deal of salt, and rises well. The loaves do best when put into the oven after other bread has been baked in it.

To distinguish coloured red wines from natural red wines, Messrs. Cottini and Fantogini, who have investigated the subject in Professor Gueri's laboratory, recommend the use of nitric acid. Fifty cubic centimètres of the wine are to be mixed with six cubic centimètres of nitric acid of 42 B. (1·4. spec. grav.); the mixture to be heated to 90 or 95 deg. Under these circumstances the natural wine experiences no perceptible change for an hour, while the adulterated wine changes colour within five minutes.

BOOK RECEIVED.

Report of the State Board of Health of Massachusets, 1871.

THE
FOOD JOURNAL.

FOREIGN OFFICE REPORTS.—Part XI.

On Provisions and Markets.

In the last number of the *Food Journal* we completed the reports on Food Adulteration, with a brief summary of the legislation in force in other countries. We now pass on to another portion of the Circular forwarded by the Foreign Office to H.M. Embassies, Legations, and Consulates, viz., "What legislative enactments at present exist, and when passed, with regard to the sale of live cattle and dead meat, the taking and sale of fish (salt and fresh water), and the sale of agricultural produce?"

We will commence our inquiry, as before, in Germany. The district of Memel is affected by an enactment issued at Königsberg, as regards the sale of live cattle, which provides that no cattle, on being sold or exchanged, are permitted to be conveyed from one place to another, or into the possession of any cattle dealer, without being accompanied by the requisite certificate of health; and any breach of this rule is punished by an imprisonment of from seven to fourteen days, or a penalty of 5 dols. to 10 dols. Butchers and meat dealers are only permitted to bring wholesome meat into the market, and any one who acts to the contrary, and particularly in the matter of diseased (*finniges*) pork, whether in large pieces or chopped up, is liable to a penalty of 10 dols. A special law has been passed to prevent the sale of trichinatous pork, which is punished by a penalty up to 50 dols., or imprisonment up to six weeks. A sharp watch is kept on the fish shops, so as to prevent the sale of any diseased or spoilt fish. Bakers are compelled to hang outside their shops tables giving the weight and prices of the articles which they sell; and they are further obliged to allow any purchaser to examine their scales and weights, and, if he thinks proper, to weigh his own purchase. Keepers of refreshment houses are under the same law and have

to furnish the police with a price list of everything that they supply; as also to place a duplicate list outside their shop doors.

As regards markets or fairs, attendance is for the most part free to everybody; but some localities enjoy a thoroughly Protectionist privilege. "In places where, according to the local custom, certain articles of artizanship are only allowed to be sold by the inhabitants of that place at the weekly market, the respective authorities may grant the continuance of the privilege of selling such articles, *without admitting dealers in the same articles from other places*." Articles allowed to be sold in markets are—1. Raw natural products, excepting large cattle. 2. Articles connected with agriculture, cultivation of food, horticulture, raising of fruit, fishing, or with any subordinate occupation of the peasants of the neighbourhood, excepting alcoholic drinks, the liberty of selling which, to be drunk on the spot, is only granted by special application. 3. Fresh articles of food of all kinds. The Memel market regulations are divided into three parts—the first, fixing the time during which, and the places where, the daily markets are allowed to be held; the second and third, fixing the dates of the two cattle fairs held here every year, and also the local arrangements for the annual fair.

At Hamburg a police regulation is in force prohibiting the use of fishing nets in the River Elbe having meshes less than one square inch in size, and especially forbidding the taking of fish-spawn in any way, under the penalty of imprisonment. It also prescribes the minimum size allowable for catching the most common sorts of fish. The market staff includes, amongst other officials, two inspectors of meat, vegetables, and fruit, and no less than five analytical chemists, whose duty it is to report on any provisions, as well as on chemicals, acids, and manures, which may be brought to them for examination. The fees are moderate, varying from 3s. to 12s. in ordinary cases, and from 15s. to 30s. in cases of dispute or damage requiring a second opinion. Owing to the facility of obtaining these analyses and the low charges, the system works very well, and has led to great improvement in the character of the goods for sale.

The inspection of meat at Leipzig market is carried on very rigidly, the inspectors being assisted by a master butcher and a district surveyor; so that there is little chance of any meat being carried to market that is not *bank-würdig*, or fit to be exposed for sale. In the case of meat slaughtered beyond the precincts of the town, and brought to the so-called "country meat market," there is not a piece which is not subjected to official examination by this master butcher, who is sworn to his office, and attends to his duty with the most jealous

accuracy. The following are the different close times for game enacted by the Saxon legislature:—For red and fallow deer, from April 1st to July 5th; wild duck, from April 1st to June 30th; all other game, from February 1st to August 31st. From the date of the twentieth day after the commencement of the close time it is illegal to deal in such game, even when killed in a private park or imported from a foreign country. The penalty for so doing is 50 thalers, or six weeks' imprisonment. The close time for trout is from September 15th to December 15th; for grayling, from March 1st to the last day of April; for perch, sander, and *karausche*, from March 1st to the end of May; for barbel, tench, bream, and white fish, such as chub, dace, and bleak, from May 1st to the end of June; for minnows, from May 1st to the end of August; for crayfish, from the beginning of September to the close of April. It is also forbidden to sell sander and carp under 1 lb. weight; trout, grayling, and barbel, under ½ lb.; perch and other fish of the kind under ¼ lb. A municipal order also prohibits the grinding or preparing for baking, brewing, or distilling, any corn that has not been previously freed from blight; nor must such corn be used for cattle food. An excellent law forbids the dyeing or colouring of sugar-stuff or gingerbread with arsenic, copper, or lead preparations, as also gilding or silvering the same with imitation gold and silver; nor must any gamboge or narcotic drug be used in the manufacture of such eatables. Infant life at Hamburgh is, consequently, much safer in this respect than it is in England.

The district of Königsberg is remarkably prolific in fish, and particularly in fresh water fish; but for all that, it is not cheap, owing to the very large quantities consumed by the Jewish and Roman Catholic population of the adjacent Polish provinces. The fish dealers may constantly be seen following the fishing boats, or wherever fishing with nets is going on; and the fish are bought up by them and transported in casks to Poland as quickly as possible. The Jewish and Roman Catholic fast days are very numerous in Poland, which makes the demand for fish exceedingly brisk; but from the method of transporting it, and the extreme liability of fresh water fish to become tainted, it frequently arrives in a state quite unfit for human food.

Berlin is exceedingly deficient in market accommodation, and, indeed, in all its sanitary arrangements; the atmosphere at this time of year being polluted by open sewers and the stagnant pools of the Thiergarten, which produce fevers and other illness. Although a covered market (the only one in the city), was lately erected on speculation by a company, it is rather remarkable that the markets

continue to be held in the public squares as in the small towns. The traders of Berlin are a conservative race, and prefer to sell their goods in the open market as their fathers did before them, without having to bear the expense of a stall in a covered one.

Coburg has been very strict in enforcing the laws of inspection of meat, ever since 1866, when trichinosis made its appearance, and several people died of it after suffering most acute agony. The inspection of the swine, and afterwards of the pork, was most rigidly carried out by scientific persons, each of whom was furnished with a microscope of sixty-fold magnifying power, and these means proved most efficacious.

The great speciality of this town in the way of provisions is beer, which is brewed in enormous quantities, both for home consumption and exportation; and, generally speaking, it is of exceedingly good quality. Any citizen is allowed to sell beer, with permission from the authorities, and if his house is adapted to receive customers. Not only the alehouses, but the breweries, are liable to inspection by the police. The former are expected to close at 11 o'clock p.m., but if the company is tolerably quiet, nothing is said about keeping open to a later hour. The police are strict in their supervision of the beer itself, and of the measures in which it is sold. If the beer is sour, or suspected to be adulterated, it is summarily seized and thrown away, and the publican is liable to a fine of 100 dols. (15*l.*). The malt tax varies from 20 groschen (2*s.*) to a dollar (3*s.*) per cwt.

[TO BE CONTINUED.]

When we regard the number of invalids who are suffering from disorders of the digestive organs arising from carelessness in eating and drinking, we are inclined to wish that the old times had returned, when physicians sat by their wealthy clients to warn them against excess, and to decide upon what was wholesome. Chaucer reads us a good lesson when he recounts the obstinacy of Henry I., who died from eating lampreys:—

> "He wylled of a lampreye to ete,
> But hys leches hym verbede, vor it was a fetle mete."

At a late meeting of the Society of Arts (Food Committee) Sir Antonio Brady observed that the loss of weight in cooking meat depended a good deal on the food upon which the animals had previously been fed. The loss in cooking United States' pork is nearly 50 per cent., whereas the pork cured in Denmark, Holstein, and Ireland only averages a loss of 25 to 30 per cent. This is worth bearing in mind by the farmers and graziers who supply our meat markets.

COOKERY PAPERS.

No. III.

Man is universally a cooking animal; but this ruling feature of his nature is displayed under widely various phases, generally characteristic of the different times or circumstances in which he is placed. When the world was young—

> "Eve within, due at her home prepared,
> For dinner savoury fruits of taste to please;"

but in our day, with our refined civilisation, the simple fare of our first parents is not piquant enough for our taste, and so we bring into play our ingenuity and skill, and the erudite lore of chemical science, to adapt our *cuisine* to the requirements of the age. The Bushman, the Kaffir, the Australian, and New Zealander, are all cooking animals; even the natives of Samarang, Java, and other places, where earth-eaters abound, develop this propensity—though in a small degree—for they bake the soil in cakes, before they eat it; the black men on the coast of Coromandel, and the red men who dwell by the great lakes of North America, are cooking animals, and bestow some sort of attention on the preparation of their food. The Chinese and the natives of our possessions in the East are very particular, not so much as to what they eat, as to how they eat it. A native regiment in India on the march, when a halt is called for the night, and the men set to work to cook their supper, is a curious sight. Each individual lights a separate fire, and each for himself cooks his own meal of curry and rice. Only in a few instances is more than one seen cooking at the same fire, and no one trusts the delicate operation of preparing his food to other hands than his own. The many little fires and the many dusky forms bending over them, or squatting near, present a singular appearance, with the pall of night thrown over the scene. There may be powerful arguments in favour of the peculiar views of a vegetarian, and train oil has charms, we know, for the fur-clad denizen of Arctic climates. But such are simply

varieties of the species, for in every instance where man can command the assistance of fire in preparing his food he invokes it to his aid, and is, I think, with reason, called a cooking animal. The epicure who can afford to indulge his *haut goût* with the luxury of an extravagant *cuisine*, and whose appetite lightly meanders each day through the intricacies of an elaborate *menu*, concocted with skill and discrimination by his eminent *chef*, picking out here and there, as his fancy prompts him, what he considers the gems of high culinary art, is as much outside the pale of my remarks as are the Hindoo, the Guacho of the Pampas of La Plata, the Arabs of our streets, or the wandering Gipsies.

My object in these papers is to consider the best means of disseminating a more extensive knowledge of good cookery amongst the middle classes, and to advocate the attainment of a knowledge of *simple* cookery as a *simple* art amongst those whose habits, manners, and customs are refined and civilised, and whose appetites are somewhat fastidious, without being either extravagant or luxurious. I strive to attract more attention to the preparation of food, and I would urge the necessity for such attention on the score of health as well as pleasure; and I hope eventually that the slumbering apathy of our middle classes may be aroused to a sense of the benefits, mental and physical, which are infallibly derived from the careful and delicate process which should be adopted in cooking their daily food.

We should wisely contrive to get half of the work of the stomach done by fire and water, and that the stomach occupies a high position among the members *va sans dire*. We have only to slight it, and its claim to our consideration will be feelingly expressed. Bad cooking, I hold to be, the abuse of fuel and materials; good cooking, the art by which these agents are induced to work together for our good. Milton says:

> "That which is not good is not delicious
> To a well-governed and wise appetite;"

and I think the inverse reading is just as true—that that which is not delicious is not good, particularly as regards food.

It is essential, however, to the satisfactory enjoyment of good cookery, that the desire to gratify the palate should always be held in subordination to the claims of health; for an immoderate indulgence in any pleasure, however harmless in itself, is surely hurtful and conducive to a baneful result. Good cookery is frequently blamed for ill effects which are simply attributable to our weakness to resist temptation, and is in no wise responsible for the condition of an overloaded stomach. The intelligent eater takes for his

motto, "Enough is as good as a feast." The aim and object of cookery has been thus aptly and tersely described :—

"The tender morsels on the palate melt,
And all the force of cookery is felt."

We can hardly expect to improve our army unless we set to work to improve our soldiers ; and so I think, if we want to improve our middle class cookery, we should begin by improving our middle class cooks. So I shall first consider who are our middle class cooks, and then proceed to point out in what way I think we can improve them. The wife of a professional man with a limited income, and others whose incomes are not large, can hardly afford to keep a good cook, very often not even "*a good plain cook*," who, as I mentioned in my former paper, generally knows as much about cookery as she does about cube roots or Hebrew. Hence in this case the mistress must herself supply the culinary knowledge, or rest content with badly dressed food.

Many families have only one servant, cook, housemaid, butler, and nurse combined ; so if in this case the domestic manages any one of her multifarious duties well, she must be a very worthy and exceptional servant ; but it is at least five chances to one if the department which she really can manage is the kitchen department. It is rarely, however, that this class of servants pretends to any knowledge of cooking, further than roasting badly a leg of mutton or spoiling a boiled pudding. Hence, in this case also, the mistress herself is virtually the cook, or should be so. If, then, the mistress does not possess a knowledge of cookery and the art of imparting it to her servant, the every-day dinner is not a very *recherché* affair.

In most cases, the mistress is accomplished in almost everything that a lady ought to know, except cookery ; it was not considered necessary to teach her to make apple-pie, or how to cook a joint of meat ; and it was not to be expected that she would be so silly as to go and get married to a man with only 300*l.* a year. But how many well-educated ladies do marry husbands, whose incomes are not so large as this even ? Cooking is not considered part of a young lady's education, though it is the A B C of domestic economy. This was not so in former times ; our mothers, ere they left their homes to enter into the happy estate of matrimony, were taught at least a smattering of the culinary art.

Now-a-days, when a woman marries a man whose income does not exceed 300*l.* per annum, her situation is one so totally unexpected (she has not received the kind of education that would fit her to occupy it with comfort to herself, and to the benefit of her husband's income), that she is utterly unfit for the

innumerable duties which devolve upon her. Under these circumstances, we can scarcely expect that the young wife should be capable of teaching her maid-of-all-work how to dress the inevitable leg of mutton. Augustus returns from the city fagged and tired. Leg of mutton is a delicious *plat*, if good, and well cooked; but Augustus (accustomed, if not to a club, at least to some restaurant or luncheon bar, where variety was possible), naturally after a time gets sick of mutton, mutton, mutton, "that eternal mutton;" more especially as it is invariably cooked either too much or too little. "Leg of mutton is economical you know; it lasts a long time." "Infernally long," Augustus would say. This is the error, this lasting of the mutton, by which the pleasure of eating is sacrificed to a mistaken economy, and a huge joint is substituted for many little delicacies which could have been bought for the same money; but which the wife, in her ignorance of the art of cookery, or in the adaptation of it, would not know how to dress inextravagantly; or would not think of procuring at all, considering them extravagant luxuries. But mutton—hot on Monday, cold on Tuesday, ditto on Wednesday, hashed on Thursday—is apt at last to cloy the appetite, and disgust the palate; and every one, if not acutely sensitive, is at least not apathetically indifferent, to culinary skill in the matter of dinner. The despairing wife, perhaps, procures a receipt-book, invests in a few delicacies, and provides (what she ought to have done at first) the necessary appliances for culinary practice; but the result, alas! from her ignorance of the essential principles of the culinary art, is not a cheering one. The delicacies are spoiled; the receipts, must be wrong; money is wasted; time thrown away; and temper not at all improved. For it is essential to success in the affairs of cookery, that a certain amount of practical knowledge be acquired, ere the tyro ventures to put her hand to the work.

A Cook.

[to be continued.]

The pods of the ground nut *(Arachis hypogæa)*, commonly known by the name of "monkey nuts," chiefly used for the expression from the seeds of a light-coloured bland oil, said to be extensively used for mixing with olive oil, are now reported to be used in America for making so-called chocolate. For this purpose they are beaten up in a mortar and the mass compressed into cakes; and it is said to form a most agreeable chocolate without a particle of true cocoa. The Americans also prepare the seeds as a dessert sweetmeat by parching them and beating them up with sugar.—*Nature.*

BRANDY IN ITS RELATION TO TABLE WINES.

Part II.

The purple colouring matter of the grapes becomes readily oxydisable under the combined influences of the atmospheric air and liquid acids, changing meanwhile from purple to a lively red tinged with orange; and as it acquires solubility in the acids, it loses its solubility in alcohol. Therefore, if the grapes have been thoroughly expressed previous to their introduction to the vats, if they have been frequently turned over during fermentation, and sufficient time has been allowed for the exposure of every portion of the fermenting mass in its turn to atmospheric influence, the wine should have a high colour. The ruby-tinted colouring material becomes dissolved in the acidulous mass, and the bright red combining with the purple tint produced by the action of the alcohol, results in a liquid, the colour of which will be deep in proportion to the amount of colouring principle in the husks of the grapes. This accords both with theory and practice. Wine-makers say, when a wine wants colour, "it has not been steeped long enough,"—and the wine-makers are right in their conclusion. Hence we derive an *a priori* inference that, as regards colour, brandying in the vat is of service only to wines at once but slightly acid and alcoholically weak. But it is not alone in respect of colour that brandy is advantageous to weak wines. The free access of the atmosphere to the fermenting fruit is always attended with a certain risk of acetation—the wine, with increased brilliancy of colour, acquires besides a disagreeable taste, and a high degree of indigestibility. Consequently, with all weak wines, whether acid or not, the addition of brandy *in the vat* produces the best results.

When the wine is *in the cask*, it is no longer in contact with the portions of the fruit which contain the colouring principle, and the addition of brandy can have no beneficial effect on the colour. But, if it is not beneficial, are we to regard it as in anywise injurious?

It has been said that brandy effects the precipitation of any excess of cream of tartar, and the neutralisation of the free acids—the latter combining with the brandy to form vinous ether. Now, when we put brandy into casks containing wine which is chiefly

dependent upon its *acidity* for colour, it naturally follows that the colouring principle, which is soluble only in presence of the acid salts, will disappear as these become precipitated. With high-coloured wines this is not of much importance, as the tint becomes improved and brightened, but with other kinds the case is different.

5. *The different kinds of Fermentation.*—Brandy has an important influence upon the durability of wine; but this influence is exerted beneficially or otherwise, according to circumstances. A liquor like grape-juice, left to itself at an ordinary temperature, never acquires much heat in the process of fermentation; the ferment develops itself, as it were spontaneously, and is always of the alcoholic form: the sugar contained in the juice is decomposed, part of it turning into alcohol, and part escaping in the form of gas. But if the temperature rises above 86 deg. Fahr., the sugar, in decomposing, may form lactic acid, to the great prejudice of the wine. This form of fermentative action is, however, uncommon in wine, and no more need be said about it here.

With a free admission of atmospheric air, at a temperature of 68 to 78 deg. Fahr., acetic fermentation will set in, and more or less vinegar will be formed at the expense of the alcohol. In course of time, and with a sufficient supply of air, even at the ordinary temperature of cellars, this acetic fermentation will spread throughout the whole volume of the wine, if the latter contains any traces of vinegar. This generally takes place when casks are allowed to stand for any length of time imperfectly filled. Putrid fermentation is dependent, not like the former sorts, upon the saccharine, but upon the albuminous matters in the wine. It is most common in slightly acid wines, whether alcoholic or not. Thus we see that alcoholic fermentation produces wine—other forms of fermentative action destroy it.

6. *Brandying in the cask—its effects on the soundness of Wine.*—Let us now enquire why it is that the wines of the South of France, even the most alcoholic, will not keep without the addition of brandy.

Here a distinction must be made between *alcoholic* wines and those containing less than 10 per cent. of alcohol, because in the South of France there are many varieties of the latter.

Confining our attention for a moment to these last, we find that they possess three characteristics—they are slightly acid, moderately alcoholic, and but lightly charged with tannin. Consequently they are deficient in the three chief elementary principles of durability, and under the influence of a climate higher than that prevailing in the rest of France they speedily "turn." In the case of strongly

alcoholic wines the causes of unsoundness are of a more complex nature. The grapes yielding these sorts of wine are extremely full of sugar—so much so, that were the whole of the sugar to be transformed into alcohol as in moderately alcoholic wines, the proportion of alcohol would exceed 18 per cent. Hence it follows that these wines contain an excess of undecomposed sugar, which has a tendency to ferment upon the least evaporation of alcohol, the smallest rise in the temperature, the most trifling variation in the atmospheric pressure, and in short upon the accession of any change whatever. As some of these slight but detrimentary influences are of daily recurrence, it follows that the wine is in a perpetual state of latent fermentation, which keeps it in bad condition, with a persistent tendency to degenerate into acetic or putrid fermentation, when its conservative elements become reduced in quantity or potency. How should these evils be obviated? With strongly alcoholic wines water should be added to the grapes during vintage, so as to reduce their alcoholic strength, to the end that the sugar retained by them under ordinary circumstances may be got rid of by fermentation—or, they should be brandied in cask, so as to raise their strength above the point at which fermentative action disappears, which in this case is effected by increasing the proportion of brandy to 18 per cent. To the weak wines of the South of France in like manner it is necessary either to add cream of tartar or tannin, or to brandy them; and this accordingly is done.

7. *The effects of Brandy on Wine.*—Besides its direct effect, brandy de-acidifies over-acid wines—develops in them an agreeable taste and perfume—enables us to counteract certain noxious influences. In addition thereto, it imparts a certain soundness of constitution to wines which under its influence are enabled to withstand the longest voyages, the greatest extremes of temperature, and the deleterious effects of the most insalubrious of cellars.

From the foregoing observations, it will be seen that Baron Thenard holds the operation of "brandying" to be useful, and in some cases indispensable, to the quality and durability of wines. This opinion is in accordance with wide-spread practice. Moreover, the Baron is a large wine-grower in Burgundy, where, as in Médoc, and other districts of France yielding the finest genuine wines, the process is rarely adopted. The Visconde de Villa-Maior, whose reputation, both as a chemist and a wine-grower, gives great weight to his opinion, takes a more restricted view of the case. He says:—"When the constituent principles are in just equilibrium, as in well-made wines which have been suitably kept, the addition of brandy is worse than useless. It may, however, be applied, as

shown above, as a corrective to wines which are defective in their construction, and by their nature thick and ill-made."

He adds, that all wines containing *over* 15 *per cent.* of alcohol must be regarded as stimulants to be partaken in moderation, and as unfit to be included in any ordinary dietetic scales as genuine table wines. The best brandy for the purposes above referred to, he considers to be that distilled from wine. Corn and grape brandies, pure as they may be, are, on that very account as it would seem, less suitable. Just as alcohol, chemically pure and diluted with water is not "cognac," so the latter does not afford the spirit best adapted to harmonise with wine, although its chemical composition may be identical. Practice also shows that, the purer and more thoroughly rectified the spirit, the less readily does it combine with the constituent principles of delicate wines.

H. M. C.

A Cambridge Correspondent writes:—In the April number a simple remedy for the nuisance of black beetles is suggested—the keeping a hedgehog in the house, with full liberty to roam about the infested apartments. Allow me to say, from experience, that the nuisance is preferable to the cure. I had two hedgehogs, and they were allowed perfect liberty to roam about a walled-in garden. They soon, however, took up their habitation underneath a summer-house, the floor of which was raised above the ground. They effected this desirable end by gnawing or scratching a hole through the woodwork, which was rather rotten. There they remained unmolested, and used to come out at dusk in search of food, which I always gave them in the shape of bread and milk. One of them, some time back, got caught in a rat-trap, which was set on the premises, and I had to have him killed. The other one appears at dusk in the spring and summer months, but we never see anything of him through the winter. I bought them for the purpose of exterminating the beetles, with which my house is infested, and, at first, they were allowed full liberty to roam about the infested apartments, though with not the least success. The house had the odour of a rabbit-hutch; and all their habits were unpleasant. Whenever the masonry within reach was in an imperfect state, they would scratch at it, until a huge heap of *débris* was strewn upon the floor. In one place especially, against the outside wall of a pantry composed of lath and plaster, they made periodical attacks, and I found that it required a bricklayer at least once a week to repair Master Hedgehog's handiwork, without any appreciable reduction of my stock of beetles, which is a large one, the house being old; indeed, in all houses where beetles prevail, the walls will be found to be in an unsound state. I have a cat which is almost as good a beetle destroyer as a hedgehog, without its disadvantages. Cucumber peeling strewn on the floor at night will be found very effective, together with many kinds of beetle powders sold for the purpose of annihilating them. The well-known beetle-trap, too, will be found useful, but the bricklayer is their greatest enemy. Thoroughly repair and stop up every hole, crack, or cranny from which they can obtain access, with cement or some other hard material; keep all the walls, wainscots, and floors in good repair, and you will see few beetles. Even if you have not many, give what few you have the occasional treat of a supper of cucumber peelings, and they will soon disappear.

THE FOOD SUPPLY OF DJIDDA.

Djidda is certainly one of the most interesting towns in the East, in spite of the dirt, which is one of the prevailing, and certainly to a casual visitor, the most conspicuous of its many claims to favourable notice.

It is the seaport of Mecca, and is little more than a day's journey from that famous city. The loaded camels take two nights to perform the journey, resting during the day midway at Hadda. The trade of Djidda is, for an eastern town, considerable, and frequently forty or fifty vessels may be counted lying together in its harbour. Most of these craft are what are termed "pilgrim ships," for, from all parts of Mussulman Asia and Africa, pilgrims to the shrine of the great founder of the false religion called after himself, flock in well-nigh countless numbers. They may be seen landing at Djidda in squalid crowds, filled with the single desire to kiss the Kaaba in the holy temple, called Beitullah or El Haram, and to drink at the well Zem-Zem; and those few enterprising Europeans who have braved all dangers in order to view the sacred shrine of Mohammedanism—the names of Burckhardt and Burton will rise to the lips as the most famous of these devotees to geographical science—relate how the caravans of the faithful from Syria, from Baghdad, and more remote places, defile in never-ending procession through the gates of the historic city.

As one who has frequently visited Djidda, and gazed on its bazaars, its narrow streets, and its roomy caravansaries, and who, as a jolly midshipman, has often invested the not too burdensome pay of an officer of that rank in the purchase of nick-nacks or curios, among which figured chiefly the "attar" of roses and black coral, for which the town is deservedly celebrated; as having had, during these visits, frequent opportunities of observing the "true believers" at their gastronomic pursuits, some observations on the food supply of Djidda may interest the readers of this Journal.

The shops are raised several feet above ground, and have before them, projecting into the street, a stone bench, sheltered from the sun by an awning usually made of mats fastened to high poles, and provided for the use of purchasers, though often appropriated by

passers-by. Many of the shops are only 6 or 7 feet wide in front, with a depth of generally from 10 to 12 feet, and having a small private room in the rear. The commerce of Djidda is chiefly the Indian trade in goods, and the coffee trade, which is also carried on in ships from Yemen without being restricted to any particular season. Coffee is drunk to excess in the Hedjaz, the province of Arabia, in which Djidda is situated, and it is not uncommon, says Burckhardt, to whom I am indebted for much in this paper, for well-to-do persons to drink twenty or thirty cups in one day, even the neediest labourer never taking less than three or four cups. Another drink is "keshree," a fluid made from the skin of the bean, which is scarcely inferior in flavour to that made from the bean itself.

In all the coffee-shops the pipe, of which there are three different descriptions, is smoked. The largest sort rests upon a tripod, and is found only in private houses; then there is a similar one of a smaller size, and having also a long flexible tube through which the smoke is inhaled. Lastly, there is the unpolished cocoa-nut shell, fitted with a thick reed, which is the solace and constant companion of the lower classes. The tobacco smoked by the higher orders, and which comes from the Persian Gulf, has a leaf of a light yellow colour. The common *tombak* comes from Yemen, and is of the same species as the other but of an inferior quality. There is also used a preparation of hemp-flowers, mixed with tobacco, called *hashysh*, which produces a kind of intoxication. The common people put a small quantity of the little leaves round the seed of the hemp flowers upon the top of the tobacco with which their pipes are filled. The higher classes eat it in a jelly or paste made by boiling a quantity of the leaves with butter for several hours, and then putting it under a press; the juice thus extracted is mixed, and, as sweet drugs, publicly sold under the name of *bast*, which means cheerfulness, as it exhilarates like opium.

Near to almost every coffee-shop stands a man who sells cooled water, which is often drunk before coffee, but never immediately after. Burckhardt relates that he was once recognised in Syria as a foreigner in consequence of having called for water just after he had taken coffee. "If you were of this country," said the waiter, "you would not spoil the taste of the coffee in your mouth by washing it away with water."

Butter not only forms the chief ingredient in all Arab cookery, but it is usual for all classes to drink the first thing every morning a coffee-cup full of clarified butter called "ghee." The lower classes are likewise in the habit of rubbing the breast, shoulders, arms, and legs with butter, as they say it invigorates the skin.

Butter is exported in large quantities from the Egyptian coast of the Red Sea.

Honey is one of the chief articles of food, and the Arabs who are very fond of paste, never eat it unless obliged, without honey. The Arabs do not use oil for cooking purposes except in frying fish.

Fruit and vegetables may be had in abundance in Djidda in certain seasons of the year. From July till November grapes of a superior kind, pomegranates, quinces, peaches, oranges, lemons, and bananas may be purchased in the shops; all these, with the exception of bananas, come from Tayf, on the other side of Mecca. The Arabs do not eat fruit in large quantities, and, indeed, that to be had at Djidda is of a particularly unwholesome quality, for being packed at Tayf in an unripe state it ferments during the journey.

Vegetables are brought from Wady Fatme about six or eight miles to the north of Djidda, and consist chiefly of cucumbers, small turnips, of which the leaves are eaten and the rest thrown away, radishes and leeks, which are very small, and eaten raw with bread by the lower orders. In general the Arabs consume very little vegetables, their dishes being made of meat, rice, flour, and butter. Tamarinds brought from the East Indies, when boiled in water, constitute a refreshing beverage, and the fruit is also given to sick people, boiled with meat into a stew.

Dates form a staple of food with all Arabs, and are imported into Djidda during the whole year. At the end of June the new fruit (called *ruteb*) comes in; this lasts for two months, after which, for the remainder of the year, the date-paste, called *adjoue*, is sold. This *adjoue* is not unknown in England, and is formed by pressing the dates, when fully ripe, into large baskets so forcibly as to reduce them to a hard, solid paste or cake, each basket weighing generally about two hundred weight. In the market the *adjoue* is cut out of the basket by the retail dealer and sold by the pound; it forms a part of the daily food among all classes, who hand down many traditions from their prophet, showing its pre-eminence above all other articles of diet. There are, says Burckhardt, upwards of twelve different sorts of *adjoue;* the most common kind comes from Fatme, and the best is imported from the Persian Gulf. The writer, who has eaten *adjoue* in Bassorah and Baghdad, could not recognise the flavour of the delicious fruit in the dry, stale, dirty-looking stuff sold for it in the streets of London. In travelling, it is dissolved in water, and forms a sweet and refreshing drink.

For breakfast, a favourite article of food is the pancake fried in

butter, and the Egyptian horse-bean boiled in water is also consumed with ghee and pepper. There are in Djidda a few shops for the sale of *kebabs* (roasted meat), for which the Turks display a partiality, and other houses where sheep's-head and feet may be had.

The shops for the sale of confectionery of various sorts are much thronged in the evening, but they do not equal in variety or quality the sweetmeats that are manufactured in India, where the natives are adepts in the art, as all Anglo-Indians who have passed some of the earlier years of their childhood there can testify. To such, visions will arise of the *luddoo*, the *para*, the *jellabee*, and many more delicious sorts of goodies.

Dried fruits are also articles of diet among the denizens of Djidda, and come chiefly from the Grecian Archipelago. In addition to dried apples, figs, raisins, apricots,* there may be had dried meat, and the salted and smoked beef, much relished by Turkish soldiers and travellers, but never touched by the Arabs, who persist in regarding it as pork in disguise, and lightly esteem the religious principle of the Turkish soldiery in consequence of their indulging in it. There is also dried cheese from Candia, but the Bedouins are not cheese consumers, but either drink the milk or convert it into butter.

The lower classes in the Hedjaz use very little wheat; their bread is made either of *dhurra* or barley flour, both of which are cheaper than wheat, or they live entirely upon rice and butter. The best description of rice comes from Guzerat in Cutch, and it forms the chief article of food of the people in the Hedjaz, who prefer it to the Egyptian rice, which is chiefly consumed by the Turks. The grain of the Indian rice is described as "larger and longer than the common sort of Egypt, and is of a yellowish colour, whereas the latter has a reddish tint." The best sorts of both are snow white. The Indian rice swells more in boiling than the Egyptian, and is for this reason preferred by the Arabs, as a smaller quantity of it will fill a dish; the Egyptian rice, on the other hand, is more nutritious. The Indian rice is rather cheaper, and is transported from Djidda to Mecca, Medina, and thence into the interior. A favourite dish with the middle classes, and one generally forming the supper, is a mixture of equal portions of rice and lentils, with butter poured over it. The Bedouin when travelling in the Hedjaz carries no other provision for the journey than rice, lentils, butter, and dates.

The salt sold at Djidda is collected from the sea, and the trade is a monopoly in the hands of the Government. The inhabitants of

* Apricots are brought from Damascus, and are considered a great luxury among the Bedouins. The stone is extracted and the fruit reduced to a paste, and spread upon its leaves to dry in the sun.

Mecca prefer rock salt, which is brought thither by the Bedouins from the mountains in the neighbourhood of Tayf. From this district come also the almonds and raisins, large quantities of which are exported to India. The almonds are of superior quality; the raisins are small and quite black, but very sweet. An intoxicating liquor is made from them.

Some of the best shops in Djidda are those belonging to druggists, who do a lucrative trade. They are chiefly from India, or of Indian descent. Besides dealing in all sorts of drugs, they sell candles, sugar, perfumery, and incense, which is much used by the wealthy inhabitants, who perfume their best rooms every morning. For this purpose mastic and sandal-wood burnt upon charcoal are in great request. Coffee is rarely drunk in private houses without an admixture of cardamoms or cloves, and spices of all sorts and red pepper form an essential ingredient of most dishes. Another article of trade is rosebuds, which are brought from the Gardens of Tayf. The people of the Hedjaz, especially the ladies, not only steep them in the water used for their ablutions, but boil them with sugar and make a preserve of them.

From the preceding it will be seen that a great portion of the articles of daily food is imported from India. This applies to a greater extent as regards articles of clothing, and cutlery, and hardware, which are also sold by natives of India, mostly from Bombay. The earthenware of China is greatly prized, and the wealthy inhabitants display costly collections of it, as well as of Persian tobacco pipes, called *nargiles*, some costing as much as $100 a piece, ranged on shelves in their reception or sitting rooms.

C. R. Low,
Late Lieut. H.M. Indian Navy.

Dr. Heisch has observed that the organisms contained in drains, when brought into a sugar solution, bring about a kind of fermentation, at the same time producing fungi. He proposes to make use of this as a test for the water which we drink.

The *Bayerische Industrie und Gewerbeblatt* gives an exhaustive account of the results of the investigations respecting water for drinking purposes, ordered to be made by the Bavarian Government some months ago. The gist of the matter appears to be, that no relation can be established between the quality of well-water and the number of inhabitants. The condition of the soil, however, the density of the population, and the drainage are of considerable influence. The most unwholesome water is found partly in the centre of towns, and partly in the quarters where the poor congregate.

OUR SALMON FISHERIES.

It is at all times a pleasant task to record the success of any legislative scheme which has been carefully laid down and carried out for the public good. The Inspectors of Fisheries' Report for 1870, published a few weeks ago, bears gratifying testimony to the fact that few legislative schemes, having to encounter so many difficulties, can claim more eminent success than our recent Salmon Acts. We find by the report that notwithstanding a considerable fall in the market price of salmon, the aggregate value of fish produced in our English and Welsh waters is estimated to have risen from 30,000*l.* per annum in 1861 to 70,000*l.* in 1869, and still further to 90,000*l.* in 1870. The average cost of salmon in Billingsgate Market in 1869 was 1*s.* 3*d.* per lb., and the average cost in 1870 was 1*s.* 1¼*d.* per lb.

Five rivers report a diminished capture of fish. The reasons given by the conservators in three cases—the Kent, Avon (Devon), and Axe being "excessive drought;" in the case of the Tyne, "mines," and in the case of the Coquet, "the extended open time for killing the bull trout." Twenty-two rivers show an increased capture of fish; for thirteen of those districts the Inspectors were furnished with returns of the actual number of salmon caught in each during 1870. The captures, contrasted with the preceding seasons, show how very marked the increase has been. We shall instance a few cases. The largest capture of the year was made from the Tyne, where 36,450 fish were taken, and "this by no means represents the whole quantity of salmon taken by nets at sea" from the same district. The Severn yielded last year 22,500 fish against 11,150 captured the year before, which latter batch was considered the largest known in the district. From the Ribble were taken 7,650 salmon in 1870; the take of the preceding year being 6,685 fish. In the Dart more than 7,000 fish were caught last year, "an enormous increase over the take of any previous year." In the Trent 2,000 fish were taken, "1,200 in 1868 being the highest previous capture." In both the Yorkshire districts the capture of 3,131 fish is recorded for 1870, against 1,776 captured in 1869. The Parret is reported to have "increased considerably, 700 fish having been taken." The Sciont also is said

to have "very considerably increased," 300 fish being caught there. In the Fowey 220 salmon were taken, "the highest previous estimate being only 120," etc. Although the numbers of salmon taken from the Dee are not given, the capture of the year is estimated at upwards of 17,000*l.*

Notwithstanding all this increase, salmon is excluded from such a large portion of our English waters as to leave us far behind Scotland or Ireland in our annual produce of fish, although our increase is steadily progressing. The following table shows how our food supply is being annually augmented from our own rivers, causing us to draw less upon foreign markets than we used to do.

Abstract of Boxes of Salmon delivered in Billingsgate.

—	Scotch.	Irish.	Dutch.	Norway.	English and Welsh.	Total Weight.	Value.
						Tons.	£
1865..	19,009	6,858	1,479	1,069	868	1,464	190,296
1866..	21,725	9,326	1,772	1,632	1,563	1,801	218,521
1867..	23,006	5,411	1,203	1,296	2,405	1,666	213,803
1868..	28,020	3,487	807	407	1,725	1,722	233,084
1869..	20,474	8,800	637	696	1,843	1,622	227,150
1870..	20,648	9,211	626	852	3,120	1,722	213,059

We should like to draw attention to the fact of the larger aggregate weight of salmon, larger by 100 tons received in Billingsgate last year, costing 14,000*l.* less than the smaller amount received in 1869. All these statistics show how satisfactorily the increased produce of our rivers, which we commented upon last year, is still progressing.

When examining the present position of our salmon fisheries it must be borne in mind that the success that we record has been chiefly gained through those portions of the Acts only which bear directly on fishing questions. The clauses of our Salmon Acts may be classified under two heads—1st, those which deal with purely fishing questions, viz., the suppression of the use of stake weirs and fixed engines in our estuaries and rivers, and all matters relating directly to the protection of the breed and the harvesting of the fish; 2nd, those clauses which deal with the far more complex questions relative to the restoration of the rivers, and the promotion of the fisheries in conjunction with various other river industries, many of which are of vastly greater value than the salmon fisheries. The framers of our Salmon Acts conceived, and we think justly conceived, that the value of those various industries need not be injuriously interfered with by the re-introduction and due preservation of salmon, while they held that the restoration of the rivers would be a vast national gain from many sanitary points of view,

as well as giving us an increased food supply from a long neglected home resource. There is not, however, one of our rivers as yet so completely restored as to allow of its assuming, in anything approaching the fullest sense, its natural, and one of its most valuable, positions as a profitable national salmon farm. This is not to be wondered at. When the Salmon Acts were passing through Parliament, those who had long and diligently studied the subject knew well that to accomplish the restoration of the English rivers must be a work of time, requiring great patience and careful judgment; that it has proved even a more difficult work than was contemplated, makes the progressive increase of salmon, now annually experienced, all the more a matter for congratulation.

The non-restoration of the rivers, so long as it continues to exist, whether in the form of unremedied obstructions, or continued pollutions, or wasteful abstraction of water, must of course circumscribe the area upon which we have to work, and this, to a large extent, must militate against the proper cultivation of the salmon. While congratulating ourselves upon the success of our Salmon Acts in increasing the national food supply, we must, therefore, bear in mind how comparatively little has, as yet, been accomplished in the actual restoration of the rivers; this will encourage us, by pointing out what a very much larger increase of food we may expect as the restoration progresses. It will also show how much we at present owe to those clauses of the Acts which bear only upon the protection of the breed and the harvesting of the fish.

Some demonstration of the amount of restoration, or the extent of river area now under cultivation is, we think, peculiarly necessary at the present crisis, when fresh legislation on the salmon question is pending, and the clauses to which we must attribute most of the success of our Salmon Acts appear to be in jeopardy.

On referring to the Inspectors' Report, published two years ago, we find an estimate given to show the extent of our salmon producing rivers now curtailed through artificial means. The Inspector (see Eighth Annual Report, pp. 68, 69, 70), after deducting the area belonging to such of our rivers as he deems "physically unsuited to salmon," such, for instance, as those flowing into the sea south of Humber and north of Thames, etc., and also deducting the numerous streams of "less importance," and speaking only of our first, second, and third-class salmon rivers, says: "Out of 36,000 square miles of country which ought to be productive of this most valuable fish, only one-fourth, or a little over

9,000 square miles produces salmon at all." The salmon being "practically excluded from 27,000 square miles" by means of navigation weirs, mill dams, pollutions, etc., it may be well to give a view of the Inspectors' estimate regarding the entire water-shed of England as shortly as possible. He says that England and Wales, to which the English Salmon Acts are applicable, contain an area of about 58,320 square miles, the rivers of which are divided as follows :—

	Square miles.
Rivers physically unsuited to salmon	12,320
Numerous small and less important rivers yielding some salmon, but reported in an unsatisfactory condition as having, "speaking generally, shown no improvement since the legislation of 1861"	10,000
First, second, and third-class salmon rivers, or portions of rivers, non-restored, the fish being still practically excluded from them	27,000
First, second, and third-class rivers, or portions of rivers, productive of salmon	9,000
Total	58,320

Since the Inspectors of Fisheries made that estimate two years have passed, and the question may be asked, what amount of restoration has taken place along the rivers during those two years?

From the two last reports of the Inspectors, as well as from various other sources, all that we gather, we are sorry to say, is not of a very encouraging nature. In certain parts of the country, no doubt, some local improvement has taken place, which the Inspectors anxiously encourage in every way they can; but here is where our present Salmon Acts break down, giving little power for the improvement of the rivers. Speaking collectively of all England and Wales, the increase of river evils in other districts far outweighs the few successful, or partially successful, attempts made towards restoration here and there. The wasteful abstraction of water seems greater, and on account of the scant rainfall during the last two years told with worse effect than ever. To quote from the Inspectors' present report, "Every year probably intensifies the evils of a drought. * * * * I have noticed during the past year frequent indications that our rivers are so dry that the influence of rain at the source is imperceptible a very short distance lower down. A fresh travels slowly down a river, for it has to fill up each successive pool on its way. * * * * Under the present system, when the pools are themselves exhausted, the filling of each successive pool delays the passage of the fresh, and a few miles of deep pools exhaust it altogether." This, which might be remedied by the more careful management of our water supply, accounts for the

wretched rod fishing of the last two years. There was little or no water left in the rivers during the open season, so that the fish could not come up. Pollutions, also, were increasing more or less on almost every stream. We cannot point to any river, and say with truth that, from source to sea, it now holds less pollution in its waters than it held two years ago. In most cases we should have to state the very contrary. In fact, speaking generally, during the period specified no practical amount of restoration or increase of area brought under cultivation can be claimed under this all-important head of pollutions. As to weir obstructions, last year one weir on a tributary to the Tyne was purchased, pulled down, and removed, by amicable arrangement with the owner.* About half-a-dozen new salmon passes have been built through the country, while some two dozen old passes have been "altered or improved." These, of course, all tend more or less to extend the area of breeding ground, but we are sorry to have to add an unfavourable make-weight to this small two years' advance towards overcoming weir obstructions. It seems that poaching in certain parts has been rife, and funds for river protection so small,† that the Inspectors have considered it expedient to advise, in some instances, that streams flowing through remote unguarded districts, hitherto unobstructed, should be blocked up so as to prevent the ascent of breeding salmon, which, if unprotected, would unquestionably fall into the hands of poachers. This, of course, in all such instances as it is carried out, so far curtails the area of fresh water brought under cultivation. In fine, with the Inspectors' Reports before us, and taking an impartial view of the subject, we are compelled to conclude that the restoration of the rivers during the last two years has remained, on the whole, very much at a stand still. Up to the end of 1868 nearly 100 salmon passes had been built, but of these more than one half were reported inefficient. It is some of these, as we have seen, that have been "improved or altered" during the last two years.

The reason why we have limited our present inquiry respecting river restoration to two years, or the period which dates

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* This is a gain of additional spawning ground to the Tyne much needed, seeing that there are some 70 miles of tributaries belonging to that river at present lost to the fisheries by pollution. (See Inspectors' Report, 1869.)

† The collective funds raised by licence duties throughout England and Wales have shown a gradual decline for the last three years, the sum raised in 1870, including the Eden, being less by 578*l.* than the sum raised in 1868. See Mr. Walpole's interesting remarks upon this subject, page 31 of the Tenth Annual Report, and also Appendix given at end of Report.

from the Inspectors of Fisheries Report for 1868, published in 1869, is because we wish to indicate the small area of water on which the protective and purely fishing clauses of our Salmon Acts have had to work. If we adopt the Inspectors' estimate, given in the Eighth Annual Report which we have quoted, much the same estimate must be correct now, and therefore our conclusion must still be that an area embracing 27,000 square miles belonging to our first, second, and third class salmon rivers that ought naturally to produce the fish, does not produce it; while only an area embracing 9,000 square miles in extent is fairly productive of salmon, out of all our 58,320 square miles of water shed. Nevertheless, by virtue of the intrinsically wise policy upon which the protective and fishing clauses are framed, our present Salmon Acts, *so far as they have been allowed to go*, have everywhere been followed by such unmistakable success in increasing the amount of salmon bred in our rivers, as has visibly benefited even the productive powers of those small streams of "less importance" which the Inspectors, two years ago, seemed inclined to put altogether outside the pale of salmon waters. The fact is, whether our rivers be large or small, late or early, the Inspectors' Reports prove that whenever the protective and fishing clauses of the present Salmon Acts have been fairly brought to bear, success to a remarkable extent has always followed. Therefore, on public grounds, it would decidedly seem unwise to interfere in any way with those clauses which have gained so much for us; yet, strange to say, the amended Salmon Bill now before Parliament proposes more or less to change almost every clause, as well as the entire principle upon which the protective and fishing clauses of our Salmon Acts are at present based, while it offers nothing whatever towards progressive legislation for the restoration of the rivers from those two worst evils with which they are afflicted, viz., pollution and wasteful abstraction of water.

Henry Ffennell.

At Geneva, and in other parts of Franco-Switzerland, the Chinese ignames are largely cultivated and prepared in various manners. The fruit is not unlike the potato, and threatens to become its rival as an article of food. They are baked, roasted, and cooked in a dozen different ways by the Geneva cooks.

According to the *Bierbrauer*, supermanganate of potassium has been employed successfully in removing organic substances from brewers' water. Thomas Spencer's proposal is to use black oxide of iron, which is obtained by heating pulverized blood-stone with sawdust in a crucible. Water passing through a layer of a few inches of this preparation comes out pure, so as no longer to discolour a solution of supermanganate of potassium.

THE GREAT DRINKING QUESTION.

Alcohol, whether its influence be for good or evil, is indisputably a mighty power. Professor Leone Levi calculates that in the United Kingdom 117,000,000*l.* is invested in the liquor trades, and that 864,000 persons are directly engaged in the produce, manufacture, and distribution of alcoholic drinks. Besides being a great employer of capital and labour, alcohol is the largest contributor to the national revenue. Last year the amount derived from wine, beer, spirit, and license duties was 24,820,623*l.*, or rather more than one-third of the whole revenue of the country. No wonder Mr. Bruce finds it extremely difficult to suggest any satisfactory legislation in respect to the liquor trade. It may be useful, as well as interesting, to notice a few of the points that have been pressed on the attention of the Home Secretary.

Some persons think that Mr. Bruce should not meddle with the matter; but *quieta non movere* does not apply to the liquor traffic. Important associations are loudly demanding legislative action to repress drunkenness. Here, at the outset, we are confronted by a very formidable difficulty. Drunkenness is not, *per se*, a crime. A man may be punished for being drunk and *disorderly*, but not for merely being drunk. Drunkenness is a vice, and it is antagonistic to modern policy to essay to make men religious or virtuous by Acts of Parliament. Burke said that it was impossible to frame an indictment against a whole people, and it is not less impossible to frame a law against drunkenness or any other vice. Can we set forth how much liquor may be lawfully consumed? Can we define the limits of lawful excitement? and what would be the use of a law that could be broken with impunity in every room of every house of the kingdom? All that Mr. Bruce proposed was to render the supply less ready, and to prevent adulteration. Fewer public-houses and good liquor were the objects of his Bill.

Then the active foes to intemperance are not united. The League and the Alliance are at daggers drawn. The League wants to put down drinking, the Alliance wants to stop excessive drinking; the League advocates total abstinence, the Alliance advocates temperance. A zealous Leaguer hates the thought of a compromise; he sneers at the talk about adulteration, and tells us that no article used in adulterating liquors is so pernicious as the

alcohol itself; he would close the public-houses, or at least he would make the liquor traffic a permissive trade. The Alliance does not denounce drinking in the abstract, but only the abuse of liquor: it holds that, like fire, alcohol may be a good, or at least a harmless servant, but it is a bad, ruinous master.

The vested interest in public-house property ought not to be, and cannot be, ignored. The sale of wines and spirits to be drunk on the premises is the only business thus restricted. The licensing of special houses began in the times when all trades were more or less monopolies, and the system has been continued for the public convenience—that is, to prevent excise frauds and to subject places of public resort to police inspection. Public-house property is held by a title as theoretically invalid as Ulster Tenant Right was before the passing of the Irish Land Act. A license is granted by the magistrates on the ground that the public-house is required for the accommodation of the neighbourhood. It is granted for one year only. According to the letter of the law, a bench of magistrates might shut up all the public-houses in their district by refusing to renew the licenses; but we have no doubt that, in the event of such action, the publicans so deprived of their property would have a remedy. In fact, public-house property is held by the title of an immemorial custom to renew the license from year to year, unless the bad conduct of the house justifies the withdrawal of the license. Professor Levi estimates the amount invested in public-house property at 57,000,000*l.* Suppose we arrive at the conclusion that there are too many public-houses, and that a third of them ought to be shut up. We shall have to do with the owners as we did with the slave owners—that is, pay them full compensation. The purchase of commissions in the army is absolutely illegal, yet, no one thinks of abolishing purchase without compensating the officers. If a year or two hence the Government should propose any scheme for forcibly diminishing the number of public-houses, the scheme must include a clause for compensation.

To the plan of allowing no more houses to be licensed, three objections are put forward. 1. It will give existing houses a monopoly of the trade incident to the increase of population. 2. It will inconvenience the inhabitants of new districts. 3. The owners of sites suitable for the erection of public-houses will be obliged to let their land at a less rent. Still this plan does not assail any vested interest.

Then comes this important question: if there are fewer public-houses, will there be less drinking? The supply from a politico-economic point of view cannot be excessive. Public houses are not subsidised by the State. They are not kept open to oblige the

public. They exist because they pay. There is a great supply because there is a great demand. Convert half the present drinkers to teetotalism, and half the public-houses would be closed without the intervention of the legislature. Convert the whole nation to teetotalism, and there would not be a public-house in the kingdom. The facilities for getting drink may encourage drinking; but then the tipplers, the class that we want to improve, will go out of their way to get liquor. Let anyone who doubts this visit Hampstead Heath on Sunday morning and see the crowd of thirsty travellers who go into the "Spaniards." Men walk for miles to get drink in the prohibited hours, and they would not be deterred by having to walk into the next street.

It has been suggested to Mr. Bruce to increase the duty on liquors. It is urged that there would be no falling off in revenue, but that the same amount of duty would be paid on a less quantity of spirits. But to this plan there is the fatal objection, that any increase of duty would make it worth while to set up secret stills, and so cheat the excise. The duty is at present so high that it requires the utmost vigilance to prevent illicit distillation. Not long ago it was proposed to increase the duty on tobacco, and an experienced officer said, "If that is done, it will be impossible to prevent smuggling and adulteration."

The effort to grapple with adulteration ought to be supported. Bad liquors not only impair the health of the consumers, but they are one of the causes of excessive drinking. Beer and spirits are doctored not to quench, but to excite thirst. It is the poorer classes who mostly suffer from the adulteration of liquors, and they ought to be protected. We would, however, suggest that the inspection should not be confined to public-houses, but include all stores of wines, spirits, and beer. The worst concoctions are sold by the "cheap" wine and spirit merchants, and by grocers. Since dealers are allowed to sell a single bottle, this becomes a very important matter for that very large class who have no wine cellars, and yet who do not frequent public-houses.

Whether public-houses should be closed for a greater number of hours every day in the week is a disputed question, but there seems to be a general agreement that it would be a boon to the families of working men, if the publics were closed an hour or two earlier on Saturday nights. Less of the wages would be squandered, and the wives would get the money in time for their marketing instead of having to buy the Sunday dinner on Sunday morning.

During the past few weeks, the Home Secretary has had his attention directed to the drinking at Working Men's Clubs. Some

of these affairs are palpable shams, got up for the purpose of evading the law. When any man can be admitted as a member on the payment of a nominal fee, the club is not *bonâ fide*, and only exists for the purpose of supplying drink when the public houses are closed. The magistrates have power to deal with these pretended clubs, but it is proposed to define a club in the forthcoming Licensing Bill; that is to say, unless the admission fee is half-a-crown, and the annual subscription five shillings a year, and applicants are formally admitted by a vote of the members, the association will not be a club within the meaning of the Act. To prohibit the sale of beer at Working Men's Clubs would be unjust and inexpedient. But the publicans complain that the clubs are allowed to be open for the supply of liquors when public-houses are closed, and they ask that clubs shall be subject to the same restrictions as public-houses. If Mr. Bruce acted on this suggestion, he would be reproached with refusing to the Working Men's Clubs the freedom enjoyed by the Pall Mall Clubs, and it is not likely that Parliament will consent to close the Carlton, the Reform, and other West End Clubs at midnight, and for the greater part of Sunday.

If we are to do any good in this drinking question, we must be temperate in our measures. For the cure of vice we must rely on moral suasion, and not on the force of laws. There always has been, and there always will be, an immense consumption of alcoholic drinks. It is a sheer waste of energy and strength to attempt to put a stop to drinking. We should fight against drunkenness, and in doing that we should take care to respect the moral responsibility and the personal liberty of the subject.

John Baker Hopkins.

The authorities of Greenock have been making an examination of the spirits sold in their town. The results of thirty-six samples analysed by Mr. Patterson, F.C.S., showed that the great bulk were far inferior to the standard of "proof spirit," which contains 57·5 per cent. of alcohol, by measure. The strongest of the samples did not approach the standard by 5 per cent., while the weakest was 21 per cent. less. Two contained 42 per cent. of alcohol; three, but 42 and 44 per cent.; twelve, but 44 and 46 per cent.; seven, but 46 and 48 per cent.; eight but 48 and 50 per cent.; three, but 50 per cent. This lowering of the standard quality was of course due to dilution by water. Mr. Patterson found no adulteration by any other material; and although the water mixture is a direct fraud, we are disposed to view it with some degree of leniency, seeing that it had the effect of sending the spirituous section of the Greenock burgesses to bed more sober than they would otherwise have done. If the authorities of our towns and burghs would follow the example of those of Greenock, a most useful check would be given to malpractices in this direction, especially if the examination is extended to other articles of diet.

INDIAN TEA.

No. 3.—Merits and Defects of the Chief Tea Districts.

In common with other tea districts of India, Cachar long suffered from defective management and the results of extravagantly purchased land, united to a certain scarcity of labour. But enjoying a superior climate to Assam, and having a peasantry naturally inclined to agriculture, it was from the first better cultivated, and consequently healthier. Besides, being nearer Calcutta, when the demand for additional labour arose, it was recruited by continual small parties from the more densely populated districts in a natural way. With such manifest advantages in its favour, it would have been strange had not Cachar at an early period taken a prominent place among the tea districts of India. Accordingly at the present time it possesses 118 plantations, with 24,374 acres under crop, which produced last year 4,009,832 lbs. of tea from the labour of 14,776 coolies under contract, and 15,000 men whose time of servitude had expired. It is a healthy sign of the industry, too, to find that these time-expired coolies are gladly renewing their engagements, and are said to be prospering in a greater degree than they do in any other part of India. According to the *Times* correspondent of 23rd February, 1869, "they now hold land, keep stock, and return from their day's task before noon, either to look after their own homesteads, or to do extra work for extra pay." When we find the workpeople on an estate prosperous and contented, the probability is that the proprietor, his manager, and agents deserve some credit, and that he has discovered some method of conducting his affairs to advantage. Here the secret seems to have latterly consisted in scientific and faithful superintendence, in bold experiments with deep trenches filled with manure. The bushes planted in such favourable situations have been found to yield an increased crop of from thirty to forty per cent. Unfortunately Cachar is subjected to periodical raids from the fierce hill tribes who swoop over the estates, where their progress is marked by rapine and desolation. From these forays they return as suddenly as they appeared, loaded with skulls and booty, and driving into captivity the coolies which they have spared. It is felt to be a blot on the Indian Government, that a district so inviting and so worthy of military

protection should hitherto have been so feebly guarded. But it is to be hoped that these ruthless skull-hunters may never again have the opportunity to ply their sanguinary occupation, as the indignation of all classes in India is at length thoroughly aroused.

In one important respect Chittagong is inferior to Assam and Cachar, as the rain-fall is much more copious and protracted. Pouring down occasionally in torrents, the excessive moisture is not only unfavourable for successful tea cultivation, but causes great damage by washing away the soil from the roots of the bushes, thus necessitating increased vigilance and much extra harassing field labour. It is possible, too, that the soil, as a whole, does not equal in quality that of these districts. Nevertheless, some of the Chittagong waste lands could not be surpassed in richness by even the choicest areas of Upper Assam, so that in such localities, owing to the presence of abundant local labour and unusual advantages for prompt and economical shipment, it will be surprising if in a few years great results are not obtained.

Previously to tea cultivation in this district, many thousands of the native labouring population had been in the habit of migrating annually to the rice fields of Akyab, where they assisted the Mugs for from six to nine months of the year. Now that tea gardens have been established, the coolies naturally prefer to remain at home and work for the garden owners. Local assistance being thus plentiful, the planters are spared the constant anxiety and occasional grief incidental to imported labour.

Situated at the north-east point of the Bay of Bengal, possessing two large tidal rivers, having a port to which much shipping resorts, with inland creeks traversing the country in every direction, and fortnightly steamers to Calcutta, so far as facilities for cheap production and export are concerned, Chittagong contrasts favourably with any other tea-growing district of India. At present the industry has not taken that firm root which it must ultimately do, when it is considered that the tea produced will not be saddled with the heavy expense of inland conveyance.

The Darjeeling gardens labour under the disadvantage that the tea plants do not flush often or abundantly, though the tea produced is of an exquisite flavour, and is highly esteemed in the home market. It is true that some of the plantations situated at considerable elevations have been abandoned; but on the lower slopes, under proper management, aided by scientific accessories and a judicious selection of plants suited to a comparatively cold climate, success has attended all well-directed efforts. The first attempt at tea cultivation here was made by Dr. Campbell in 1842 at an elevation of

7,000 feet. The bushes grew well, but subsequent trials showed that the frost killed the Assam seedlings, and that the succession of flushes from the hardier plants which survived were too few to promise a profitable return. As a mercantile speculation, it was not until fourteen years thereafter that Major Samlee ventured to plant and cultivate the shrub at an elevation of about 5,000 feet. Since then the industry has become established to such an extent that there are now forty-four gardens under crop, having a cultivated area of 10,067 acres out of 25,865 acres leased to planters, which in 1869 yielded 851,549 lbs. of tea. A novel experiment has been successfully tried recently in the Turai, a district at the base of the Darjeeling slopes, where the elevation corresponds with that of the Assam gardens, and is within the malarious level. It had been found that the Meches, natives of Surai and Dhanguri, are proof against the poison of malaria, and consequently escape the attacks of jungle fever. These people are employed as labourers, whilst the Europeans in charge have their residences on the hills above the fatal line, to which they retire before sunset, and so escape the virulence of the subtle poison. Darjeeling, although in a better position as regards communication with a shipping port than some of the other tea districts, labours under a disadvantage. The cost of carriage to Calcutta, first along the hill roads by means of coolies, next by the aid of bullock carts, and latterly by 300 miles of railway and water conveyance, is so considerable that it forms a heavy tax upon its tea. Recent advices state, however, that coal has been discovered, and that the Viceroy has ordered the survey of a link of railway to connect the leading town of Darjeeling with the existing railway system, so that this desirable centre of civilization will no doubt ere long possess means of still further development.

Dehra Dhoon is a tract of country situated in 30 deg. 20 min. north latitude, and consequently within the limits of the best tea districts of China. This circumstance, and its moderate elevation of 2,000 feet above the sea level, would seem to indicate a locality not unsuited for tea cultivation. But the advocates for the superiority of Assam say that the moist heat of Eastern Bengal is wanting; consequently the Dhoon is not adapted for dividend-paying gardens. On the other hand, it is found that it possesses a tolerably rich soil, consisting of clay and vegetable remains resting on a gravelly substratum of lime, sandstone, clay-slate, and quartz, but destitute of iron; such a soil, in fact, as, arguing from its similarity to that of the Chinese Moyuen district, ought to be devoted to the production of green tea only. Accordingly, the experiment has been tried with considerable success. Fair, and even

fine young hyson, hyson, and gunpowder are now prepared, and sell on the spot at 1 rupee 2 annas per lb., equal to 2*s.* 3*d.* sterling.

The Kangra district comprehends most of the hill territory owned by Britain, situated between the rivers Ravee and Sutlej; but not having been surveyed, its area can only be roughly estimated at about 8,000 square miles. The spots hitherto chosen for tea gardens, although not so elevated as others among the Himalayas, lie at an altitude of from three to four thousand feet. The plantations are well supplied with native labour, and the tea hitherto produced good in quality and flavour, although somewhat deficient in strength. Here, as at Dehra Dhoon, the best paying manufacture ought to be green tea. For capitalists thirsty after large dividends, Kangra is not as yet the field; but for young men of energy, experience, and limited means, wishing honourable occupation, a pleasant climate, and a fair return, it offers good prospects. In short, the advantage which settlers there possess is not so much in the goodness of the soil as in the abundance of cheap labour; nothing further being required at the hands of the planter than just and considerate treatment, in order to secure an ample supply of willing coolies. A most encouraging feature consists in the eagerness with which the natives take to tea cultivation on their own account, so that ere long we may hope to see the European engaged wholly as a manipulator rather than as a planter. His proper sphere in India undoubtedly is to encourage the natives with advice, capital, and scientific assistance; to persuade them to grow whatever pays them best; then to purchase and prepare the raw material for the market. Another fact of the greatest importance should not be overlooked, which is this: the Mahomedan population occupying the revolted north-west frontier of China are inveterate tea-drinkers. Now that they are independent of that country, and hostile to it, they cannot supply themselves with tea direct, but depend on Russian merchants, who of course obtain monopolists' prices. Under these circumstances, Kangra evidently becomes the natural source from which the fragrant leaf ought to be drawn. It is said that those followers of the Prophet object to Indian tea as being too strong, but they will consume it rather than have none at all.

W. Cochran.

[to be continued.]

ANCIENT AND MODERN COOKERY

"In the hands of an expert cook," says Majendie, "alimentary substances are made almost entirely to change their nature, their form, consistence, odour, savour, colour, chemical composition, etc.; everything is so modified that it is often impossible for the most exquisite sense of taste to recognise the substance which makes up the basis of certain dishes. The greatest utility of the kitchen consists in making the food agreeable to the senses, and rendering it easy of digestion." It is a commonly received opinion that good cooking is a sign of the civilisation of a people, and it is certain that bad cooking will spoil the best food in the world. In the highest state of civilisation and luxury amongst the Greeks and Romans, the culinary art was very much honoured, and Homer disdained not to devote some flowing hexameters to the description of the cookery of his countrymen. Cato also, in his book on agriculture, gives several recipes for dishes of flour and vegetables.

When the Romans learnt Asiatic magnificence, luxury in eating increased to such a degree that laws were passed to keep it within bounds. Lucullus carried epicurism to an extreme, and erected several dining halls in his palaces, giving to each of them the name of a deity. Under Tiberius there were schools and teachers of cookery in Rome, which would not be a bad thing for us to imitate, while we might omit the deifying of our dining halls. Roman cookery was remarkable for the great use of oil or oily substances, and in the later age of Roman greatness the cook's object was to please the palate rather than to provide for the healthy nourishment of the system. The Italians have followed the same habit of using much oil in their cookery, and this character prevails more or less among the nations of Latin descent. The French rather changed the system into the fashion of making thick gravies with their dishes, which was possibly owing to the fact that oil is only furnished by a small part of Southern France, and good butter only produced in a small portion of the North. In France also an over refinement in cooking became prevalent, and gave rise to literary works like the *Almanach des Gourmands*.

The British took quite a different course to that of the Italians and French, and from one reason or other their cookery has been of a simple and substantial nature. Of course, even this may be

carried to an extreme, for it is thought by many that the great amount of dyspepsia prevalent in England and the United States proceeds from our somewhat *hard* process of cookery, and it would be interesting in a medical point of view to show the connection of different diseases, in various countries, with the dishes most commonly in use.

A badly boiled potato is one of the most deleterious things which we can eat, and it is a curious fact that few cooks can boil potatoes really well, though they are such a simple article of food. They either boil them too quickly—which may render them deceitfully floury without, but hard as a stone within—or cause them to be waxy and soapy, by omitting to drain off the water thoroughly when they are quite boiled.

We have an idea in England that beef and mutton give greater strength to the frame if eaten half raw, but science has agreed that this is very unwholesome in other ways Meat should be well done—and roasting is considered to be the most wholesome method for fresh joints—without being so much cooked as to lose its flavour or juice. In the first place, whenever it is possible—and the weather in England rarely renders it impossible for a long period—meat should be kept long enough to divest it of the toughness of its fibre, though many cooks and housekeepers will not take the trouble to see to this, but have to send hurriedly to the butcher for meat, for want of forethought. Then it is eaten fresh, and the consequence is that it is liable to be tough and unwholesome. Game which can be eaten "high" is considered very digestible for that reason; and though we may not approve of our mutton and beef in that state, it may be kept sufficiently long to render it tender, if people will take the trouble to do so. Fish is very indigestible to many people, and must be well cooked—it should be a perfectly easy matter to separate the flesh from the bones of a fish, and this is a good test of its being sufficiently cooked. Then again, all vegetables should be thoroughly boiled, for by neglect of this many diseases of the intestines are engendered.

A. B. Le Geyt.

Swiss Honey.—Dr. H. Hager experimented on some honey which had been sent direct to him from Switzerland. He writes to the *Pharmac. Centralhalle*, that, contrary to expectation, the honey showed no inclination to form crystals after more than nine months' keeping. He found on investigation that it contained no inconsiderable amount of sulphate of lime and starch. It was evidently prepared from starch, syrup, and honey.

ON THE SANITARY CONDITION OF THE CITY OF DUBLIN.

Part III.

As I am constantly engaged in water analysis, I have had numerous opportunities of tracing outbreaks of Asiatic cholera and typhoid fever to the use of impure well-water. During the last epidemic of cholera in Dublin, I satisfied myself that the virus of the disease was commonly communicated through the medium of foul water. Several of the city pumps which I found loaded with organic impurities, and to the use of the water of which I attributed numerous cases of cholera, were closed by order of the Corporation. Quite recently several unequivocal cases of enteric fever, caused by the use of contaminated water, have come under my observation. The following are a few details of the analyses of some specimens of Dublin pump water lately examined.

One imperial gallon (70,000 grains) contained in grains :—

	No. 1.	No. 2.	No. 3.	No. 4.
Mineral Matter	24·02	35·76	24·99	34·17
Volatile and Organic Matter	21·00	11·44	17·56	4·90
Total Solids per gallon	45·02	47·20	42·55	39·07
Actual Organic Matter	8·90	3·02	6·30	0·94
Nitric Acid	7·50	0·69	6·80	Faint trace
Ammonia	0·86	Trace	0·48	None

No. 1 and No. 3 were pump waters used in private houses in which almost every member of two large families was stricken with typhoid fever, which in several cases proved fatal. In one house it was proved that the soil pipe from the water-closet discharged its contents into the ground at a place only a few feet distant from the pump. In the other house it was also ascertained that there was communication between the well which furnished the pump and the sewer of the next house. No 2 shows the composition of a well at the Government model farm, Glasnevin, where there had been some cases of typhoid fever. No. 4 shows the composition of the pump water in the large commercial establishment of Sir John Arnott and Co., situated in one of the most central and densely populated districts of the city. This water is remarkably pure, a circumstance evidently due to the great care taken in the construction and repair of the sewers of this vast establishment.

And now, having described the more important sanitary conditions under which the citizens of Dublin are placed, it remains but to give a sketch of the constitution of the body who have charge of the sanitary administration of the city, and to briefly indicate the nature of their operations.

Five years ago a section of the Corporation, consisting of thirty-six members, was constituted under the designation of the "Public Health Committee," and was authorised to wield the powers vested in local governing bodies by the Public Health Act of 1866. Before the Public Health Committee was constituted, the sanitary affairs of the city were most inadequately attended to by a "Sanitary Committee" of the Corporation, whose working staff consisted of only five persons. At present the sanitary staff of the city consists of the following:—A medical officer of health, a chemical officer and inspector of food (termed the city analyst), a secretary (who is also a sanitary engineer), two inspectors of nuisances—engaged in the inspection of markets, slaughter-houses, etc., with the view of preventing the sale of diseased and otherwise unsound food, and in obtaining samples of food suspected to be adulterated, in order to have them analysed. Eight sergeants of the metropolitan police—in uniform, and subject to police discipline, but acting exclusively under the orders of the committee—are engaged as sanitary inspectors. Four police constables in uniform are exclusively employed as inspectors of markets, slaughter-houses, and other places where food is prepared or exposed for sale. Lastly there are two persons employed in disinfecting clothing and dwellings. Thus it will be seen that the sanitary staff of the City of Dublin consists of nineteen persons, as large a number as the civic finances admit of, but which are scarcely sufficient for the thorough sanitary administration of a city of a quarter of a million inhabitants.

Part of the expense of the police sanitary officers is defrayed out of the police fund; and this lessens the drain on the Corporation treasury, which is called upon to contribute about 1,200*l.* a year for sanitary purposes. The salaries received by the officials are not large; that of the medical officer of health is 150*l.*; the city analyst receives 250*l.*, and 50*l.* for expenses; and the secretary is paid 260*l.* a year. The officer of health and the city analyst hold other public appointments.

When the small expenditure of money is taken into account, the amount of sanitary work performed in Dublin is very large. There are about 9,300 tenement houses in the city, and these are constantly inspected, and any nuisances found therein are abated, by

compulsion or otherwise. The number of sanitary defects annually rectified averages 16,000. About 1,500 summonses are annually taken out, of which less than 1 per cent. is dismissed by the magistrates. Pigs are being removed from the city at the rate of about 400 a year. Great attention is paid to the carrying out of the provisions of the "Workshops Regulation Act," and several persons have been convicted of the offence of overcrowding their workshops. The chemical factories and manure works are constantly supervised, and their owners are frequently summoned for permitting the escape of noxious effluvia. Some attention is given to the prevention of the emission of black smoke from factory chimneys, and several convictions in relation to this matter have been obtained; but, on the whole, this nuisance has not been as effectually dealt with as in some other cities. Samples of petroleum are collected from the vendors of that article, but none giving off inflammable vapours under 100 deg. Fahr. have yet been detected. The bakehouses are rigorously inspected, and their condition is, on the whole, satisfactory. The cowhouses are not in a proper state, but the powers wielded by the Public Health Committee do not enable it to interfere efficaciously with the dairy yards.

Four years ago the Public Health Committee constructed a hot-air disinfecting chamber, at a cost of 400*l.* In this apparatus tainted clothing, bedding, etc., are disinfected at charges which are almost nominal, and the process does not injure in the slightest degree the texture of the articles. I regret to say that the public do not use this apparatus to any extent, not more than 1,000 articles being annually disinfected in it.

There are two departments of the sanitary administration of Dublin which are certainly in a more satisfactory condition than similar departments existing in most other cities. I refer to the inspection of diseased and unsound food, and the detection of adulterated food and drink.

In the year 1870 the following quantities of unsound food were detected and confiscated:

	lbs.
Beef	364,400
Veal	1,500
Mutton	2,100
Pork	8,150
Ham and bacon	9,339
Goat flesh	150
Fish	2,741
Fruit and Vegetables	2,777
Total	391,157

Thirty persons were convicted during the year for preparing or exposing for sale diseased meat; of these, two were sent to prison for three months, one was incarcerated for a month, and another was relegated to gaol for 14 days; whilst the others were fined in sums varying from 10*s.* to 20*l.* Although only four police constables are exclusively employed in detecting diseased meat, the whole police force, numbering 1,100 men, co-operate with them. There is a general order to the force to seize any animal used as food which may appear to them to be sick, or any carcass or fragment of meat which may have a suspicious appearance.

One of the inspectors of nuisances occasionally purchases food and submits it to the city analyst. If found to be adulterated, the vendor is summoned before the police magistrates. Last year twelve persons were fined for selling adulterated food, and during the last five years more than 100 convictions of food adulterators have been obtained. In 1870 the fines and costs imposed upon persons convicted for selling, or for trying to sell, diseased and adulterated food amounted to 156*l.* 18*s.* During the present year the Public Health Committee intend to deal still more vigorously with the sophisticators of food and drink.

Charles A. Cameron, M.D.

War and necessity call forth resources the existence of which mankind would, perhaps, for ever be ignorant otherwise; and, apropos of this fact, some interesting researches have been made in Sweden concerning the nutritive properties of lichens. Professor Stenberg has experimented on them with a view of ascertaining how much amylum they contained. In *Evernia jubata* there were found 29 to 33 per cent.; in *Cetraria islandica*, 27 to 31 per cent.; in the root of *Nymphæa alba*, 12 to 14 per cent.; in the *Nuphar luteum*, 8 to 10 per cent.; in the bark of *Pinus sylvestris*, 4 to 5 per cent.; in reindeer moss *(Cladonia rangiferina)*, only about 1 per cent. These results are, if anything, taken too low. The substances under investigation were either washed with a weak ley, or broken and pulverised, then boiled with proportionately equal quantities of water, and repeatedly filtered and pressed. The starch contained in the water was transformed into grape sugar by means of protracted boiling with diluted sulphuric acid, the quantity of which was afterwards determined by carbonate of barium according to well-known tests. The above experiments tend to show that the *Evernia jubata* is especially valuable. It contains, however, a bitter substance (perhaps cetrar acid), which has to be removed with an alkaline ley and cold water. An argument strongly in favour of its application is to be found in the fact that it can be gathered even in a deep snow. The bread made from it has a kind of felt-like consistence, which, however, can be changed into something more agreeable by boiling and pressing the prepared powder, and, if practicable, by mixing the decoction containing amylum with some rye flour.

KANGAROOS.

The marsupial or pouched quadrupeds form a remarkably distinct order of Mammalia, differing from all the rest of that class, not only in the peculiarity from which they derive their name—the pouch under the belly of the females, in which they carry their young—and the correlative character of the very early stage of fœtal development at which the young are born, but also in many other important particulars. The first, and for a long time the only, marsupial quadrupeds known to naturalists were the opossums of America; but it is in Australia that this order chiefly abounds, and it is one of the most remarkable facts which call for our attention with regard to the geographic distribution of animals, that with scarcely more than a single exception, all the native mammalia of that part of the world are marsupial. It is to be observed also that the marsupial animals differ greatly from each other in structure and habits, exhibiting points of resemblance to the most widely different of the other orders of Mammalia, some being carnivorous and having teeth, claws, and digestive organs similar to those of other beasts of prey; some approaching in character to rodents; whilst some are strictly herbivorous, resembling in many respects the ordinary ruminants. Of this section of the order the kangaroos afford the most perfect example, and it is said that they sometimes actually chew the cud. They have no canine teeth, and the stomach is large, and is formed of two elongated sacs. In their shape, and in many of their habits, however, they differ very widely, not only from all the quadrupeds of the order of *Ruminantia*, but from all other animals whatever. The great length of the hind legs, the comparative smallness of the fore legs, the claws with which the toes are armed, the use of the fore feet as organs of prehension, the length of the tapering tail, its great thickness at the base, and the use of it along with the hind legs to form a tripod for the support of the animal in the erect posture in which it sits, as well as its walking on the hind legs alone, and the mode of progression by leaping when greater speed is required, are characteristics common to all the species of kangaroos, and which strongly distinguish them from every other kind of quadruped.

Herbivorous animals are generally good for food, and the kangaroos are no exception to this rule; whilst the other marsupial quadrupeds, not being herbivorous or not exclusively so, are scarcely ever employed for food except by savages, ready under the pressure of hunger to devour any kind of flesh they can obtain. Ever since European colonies were founded in Australia, the excellence of the flesh of the kangaroo has been universally recognised by the colonists. The tail, which is very muscular, or fleshy, is regarded as an especial luxury, and kangaroo-tail soup is probably one of the best kinds of soup ever placed upon the table in any country. The flesh of the kangaroo has now begun to be imported into England, through the enterprise of Mr. J. W. Billiatt, 162, Upper Thames-street, London. It comes to this country in a perfectly fresh state, in tins, like Australian beef and mutton, and is sold under the name of Kangaroo Venison. Its good qualities will readily be acknowledged by all who partake of it, and it is to be regretted that prejudice against a novelty of which they have never before heard, should prevent any from making trial of it. The specimens hitherto brought to the market are highly flavoured by spices. They are very agreeable to the taste, but whether this practice of high-flavouring ought to be continued, is a question which we cannot pretend to decide. The price per pound is considerably higher than that of Australian beef or mutton; but this, of course, was to be expected, and kangaroo venison must be regarded rather as an occasional luxury than as a common article of food for the humbler classes. The same remark is even more strongly applicable to kangaroo-tail soup, which has also begun to be imported by Mr. Billiatt, and is offered for sale in tins containing two pounds, or about one quart, at a price of three shillings a tin. We recommend a trial, however, both of "kangaroo venison" and kangaroo-tail soup to those who can afford it, and wish Mr. Billiatt great success in his spirited attempt to introduce them into this country.

We are not informed what species of kangaroo it is of which the flesh is imported, but probably it is that known to naturalists as *Macropus Brunnii*, which is common in many parts of Australia and in Van Diemen's Land, its range also extending to New Guinea, where it was first discovered. It was the first species of kangaroo known to Europeans, and was described by Le Brun, in 1711. It is of a greyish-brown colour, with moderately long and soft fur, sometimes attaining a weight of 160 lbs., or more.

J. Montgomery.

NEW EDIBLES.

No. 2.—Roots.

Botanically speaking, the term root, as applied to many of our esculents, is incorrect. That most common and indispensable of our so-called root crops, the potato, is really a tuber, or fleshy underground stem, the "eyes" being the buds from whence spring the branches or young plants. We have, however, elected to include under the above head of roots all those underground productions botanically known as tubers, and of these there are many that would appear worthy of persevering efforts at cultivation in this country as articles of food. When we consider what the potato is like in its native country of Chili, a waxy tuber not larger than a walnut, and when we see what a system of culture has done, and that in comparatively modern times, to bring this little tuber to its present perfection, we are led to think that a similar agency, if properly and patiently conducted, might result in giving us some new esculents, not absolutely to displace our old and well-tried friend the potato, but to supply the deficiencies, when such arise in the potato crops, as well as to act in honourable rivalry with it.

Knowing, then, how much we are indebted to Chili for giving us the potato, we will direct our attention to some other products of the South American continent; and first may be mentioned the *Ullucus tuberosus*, a little twining or prostrate plant, belonging to the natural order *Basellaceæ*, and known to the natives as *oca-quina*. These plants are largely cultivated in Bolivia and the Andes of Peru for the sake of the tubers, which are scarcely so large as a walnut, are of a yellowish colour, and are in appearance not unlike small potatoes; they are produced underground at the ends of long thread-like branches. Like the native Chilian potatoes, they are waxy, and if not sufficiently cooked, stick to the teeth like gum or glue. The natives cook them in a precisely similar manner to the true potato, by exposing them for three or four nights to the atmosphere in an elevated situation, occasionally throwing water upon them, so that they become frozen, after which they are placed in the sun to dry; the final result is a starchy and palatable tuber,

instead of a waxy one with an earthy flavour. These tubers have been grown in England, but have never, to our knowledge, been subjected to a system of cultural experiments.

Oxalis crenata, native of Peru, and *O. tuberosa*, native of Bolivia, are both cultivated in their native countries for the sake of their tubers, which in *O. crenata* are small, the average weight of each being about 2 oz.; and a single plant is said to produce about ½ lb. weight of them. In *O. tuberosa* they are about the size of a large marble, and have much the appearance of little immature potatoes. The tubers of both species, indeed the entire plants, have an acid flavour, owing to the presence of oxalic acid; this objectionable flavour, however, disappears in the process of cooking, the acid principle being converted into saccharine matter, and the tubers becoming floury. *O. crenata* has been grown in this country, and was, at one time, recommended as a substitute for the potato. How far cultivation might increase the size of the tubers, and improve their quality, has not been proved; but it is beyond doubt that some good result might be attained. A Mexican species (*O. deppei*) produces fleshy fusiform roots of moderate size, which are edible. *Arracacha esculenta* is another South American tuberous plant. In habit it is similar to the hemlock, to which it is botanically allied. The roots are large, and divided into fleshy lobes, about the size of an ordinary carrot. It is cultivated in the cooler mountain regions of Northern South America, where the roots form a regular article of food; and when boiled, they are said to have a combined flavour of a chesnut and a parsnip. The plants thrive in their native country, where the mean temperature of the warmest month is 62°, and of the coldest month 57°. It was, therefore, at one time, thought that they might be cultivated advantageously in the South of England and in some parts of Ireland. They might, perhaps, be satisfactorily grown in some of our colonies.

Amongst tuberous plants of North America used for food, the *Apios tuberosa* is worthy of notice. It is a twining plant, belonging to the pea family, and grows in hedges and bushes on the mountains from Pennsylvania to Carolina. The tubers are small, but are produced in large quantities, and are very mealy; the plants grow well in England in ordinary garden soil, and can be increased almost indefinitely by separating the tubers.

The prairie turnip (*Psoralea esculenta*), also a leguminous plant, is a native of N. W. America, where the large tuberous roots are eaten either raw or boiled, and constitute a large proportion of the food of the natives. The tuber has a dark-brown skin, and is said

to have an insipid taste. The plant has been introduced into our hothouses. The sweet potato (*Batatas edulis*) and the yam (*Dioscorea*, sp.) are not altogether unknown in England; indeed the first-named was introduced as a delicacy long before the potato itself, and has frequently been confounded with it by the earlier writers. At the present time the plants are largely cultivated in most tropical and sub-tropical countries; several varieties are known, some producing very large tubers. They have an agreeable, sweetish taste, and are very nutritive, containing more flesh-forming matters than the common potato. The sweet potato is sometimes seen in this country, but it should be more generally introduced and used as an esculent. The yam is likewise occasionally brought from the West Indies, and though not often used with us, it is too well known to need description.

Having drawn attention to a few of the tuberous-rooted plants of foreign countries, some of which have been before recommended, and others of which appear to us likely to prove useful, were they submitted to a series of careful and patient experiments in cultivation, we will, before concluding our subject, point out one or two European and British plants as examples of what may be found amongst our own indigenous vegetation. The parsnip chervil (*Chærophyllum bulbosum*) is common in France, and has been known to gardeners in this country since 1726, while some attention has been given to its culture as an esculent. The root is similar in form and size to a small Dutch carrot, and is outwardly of a grey colour, with a white mealy interior. When boiled the flavour somewhat resembles that of the potato; it is wholesome and nutritive, and has been recommended for cultivation with us as a vegetable. In the Hebrides the roots of the goose weed or silver weed (*Potentilla anserina*) are not unfrequently collected by the people in times of scarcity, and boiled or roasted for food. The roots of the bistort (*Polygonum bistorta*), though containing a large quantity of tannin, and consequently very astringent and bitter, when raw, are, after being steeped in water and roasted, edible and nutritious. In Russia and Siberia they are much used when there is a scarcity of bread.

We do not mean to imply that all the plants here mentioned are suitable either for cultivation or use as food plants in this country. We have described a few of the most likely, and referred to others, to show that the resources, either by culture or by a system of commerce, are unlimited.

John R. Jackson, A.L.S.

WINES OF THE CAPE.

BY THE LATE CYRUS REDDING, ESQ.

We cannot give to the wines of the Cape of Good Hope exclusively the old term of "Cape" wines. Our colonies at present embrace so many "Capes" in all parts of the world, that it becomes us to particularise and to be more exact in our definitions. The wines of South Africa have attained a pre-eminence of no short standing, first among the Dutch, when the Cape was in their possession, and next among ourselves. But the only wines in our colonies that have made for themselves any great celebrity, or have been appreciated for a long series of years, are the Constantia wines, which are noted for their superior qualities, and are a species of what the French denominate *vins de liqueur*.

The vines at the Cape are planted much in the same way as is adopted in the northern or north-western parts of France. The training is in general of the low kind, "*vigne à tiges basses*," though in some of the vineyards the vines are trained on low trellis work, the latter being more particularly the case in the Constantia vineyards. About 5,000 vines are planted to the acre of ground. What they call the *hanapod* grape, yields the richest wine, and is, moreover, a species that makes excellent raisins. The wholesale price of the wine per pipe on the spot, is about 80*s*., and the quantity made, about five pipes per acre. The produce of the entire colony varies much, and has long been on the increase. Some years ago there were nearly 300,000 acres of land in cultivation, of which the product in leagers, or pipes, was about 18,000 of wine, and 1,500 of brandy, but it is doubtful whether the returns were correct as those of the land in cultivation certainly were not.

Wine was the first and principal export from the Cape, where it was introduced by a colony of refugees after the revocation of the edict of Nantes. The cultivation of the vine was extended during the war of England with France, and the traffic became much enlarged, Cape wines were admitted into the English market at one-third of the duty on Spanish and Portugal wines, and in a few years the produce of the grape, in wine and brandy, rose to 19,200 leagers of 117 gallons each.

Near the point called the Cape of Good Hope, a series of high grounds from Table Bay goes westwards towards Constantia, interrupted by a vale near Constantia itself, which leads to Hout

Bay, and to an estate called Alphen. Only about three miles distant from it is the vineyard of Constantia, or rather of the Constantias, as these celebrated vineyards are so denominated. The celebrity of the wine is also enhanced by the beautiful productions which grow around, as ixias, gladioli, moreas, hyacinths, cypheas, melantheas, geraniums, and numberless flowers and plants of great beauty, enamelling the ground hard by and imparting "vernal delight and joy," with the wildest and most delicious profusion.

The vineyards consist of two farms, the one where the white Constantia is made lying in an angle formed by, and near a ridge of, hills coming from the Meisen mountain, where it goes off to Hout Bay. The second vineyard, which yields the fine red Constantia, is near the other, and produces only about 60 leagers; that of the white being about 90. Each leager is reckoned as 600 French pints. A third part of the wine was formerly kept for themselves by the Dutch company of the Cape, and the rest, being all bespoke in Europe, was sent away. These wines were seldom seen at the tables of the Cape, being too choice. The red Constantia sold at $66 the arem, but the white was generally cheaper, and the former still commands a higher price. The common white wine of the Cape formerly sold at different prices, from between $10 to $76 the leager. It fluctuates much as to cost, depending upon the season and the demand, in order, in some cases, to make adulterated wines in England, and for which, in Europe also, according to some authorities, it is too often employed.

The Constantia wine is indebted for its superiority solely to the soil, and not to any manipulation that it receives; nor is this a solitary illustration of such a peculiarity. In Europe, and particularly in France, two vineyards separated only by a high road, and with no other perceptible difference of site, will produce, the one a highly valued wine, the other a very ordinary one. The difference seems to be a secret of nature; and no one who has tasted the Constantia, with its delightful and delicate flavour, but must appreciate its fine quality. This is owing to something peculiar in the soil, for the same vines removed and planted elsewhere, give only the ordinary country wine. Good grapes do not always return first-class wine. All the other vineyards here produce the common Cape wine—even plants taken from the Constantia ground, and afterwards prepared in a similar way; and it is certain that there are soils which impart peculiar qualities to the grape.

The other wines of the Cape are various, those made immediately at the Cape and its environs being named after the European

growths. Burgundy, Madeira, Moselle, and even Malmsey, are among the products of the colony. These are named from some analogy which they are supposed to bear to the different kinds of those vines, or else from the places in Europe, from whence the vines were originally brought. But they are not remarkable for any peculiarity, and many of them are sent to England for the purpose of sophisticating other kinds grown elsewhere.

It is a common complaint, that sulphur is too liberally used in the ordinary Cape wines, and the farmers are censured for it as being prejudicial to them when in competition with those of Europe.

In their wine manipulation, the Dutch wine makers were more eager to produce a large quantity rather than a smaller yield of fine quality, and in so doing they suffered the wines to imbibe a peculiar "twang," which caused a prejudice against some of them in the European market. This was not the fault of the climate or of the fruit, but entirely arose from the neglect of the makers. Some of the carefully-made wines are as finely flavoured as can be desired; but the Dutch farmer is the creature of habit in everything, and in this respect has been his own enemy. The Cape Madeira, Partac, Sherry, and other wines with European names, are found here and there in certain vineyards, and where the care of the grower has been bestowed with judgment, are as good in quality as can be desired; but, unfortunately, these instances are but too rare.

Some of the vineyards of the Cape, situated at a distance up the country, produce excellent fruit, but the wine made from them is by no means commendable. This is not the fault of the fruit or climate, but of the idleness of the boors, who take no pains in its manipulation. In fact, the soil may be found capable of all that can be expected of it in the cultivation of wine, oil, and corn; but it is only managed to meet the wants of colonists, who, up the country, are content to live, but not to advance; in fact, the appearance of Long Pass and its fertile meadows, the farms, with their vineyards and orange trees, all in rich luxuriance, seem to invite the stranger to a spot where, if he could live content, he may do so, far from the turmoil and anxiety of busy city pursuits.

There is nothing on the part of nature wanting for the production in the colony of excellent wine, but more skill and attention are required in the treatment of the fruit; and it is to be hoped that all those who are interested in the Cape of Good Hope and its productions will devote their attention to introducing better systems of cultivation and manipulation; for by these means only, will Cape wines succeed in maintaining their place in the English market.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

FOUR EXCELLENT SANDWICHES.

Cheese.—Take two-thirds of good cheese, grated, and one-third of butter add a little cream; pound all together in a mortar; then spread it on slices o brown bread or gems; lay another slice over each; press them gently together, and cut in small square pieces.

Egg.—Boil fresh eggs for five minutes; put them in cold water, and when quite cold, peel them, and after taking a little of the white off each end of the eggs, cut the remainder in four slices; lay them between bread and butter.

Fried Egg.—Beat some eggs well; fry them in butter as a pancake; when cold, cut in small squares, and lay them between slices of brown bread and butter.

Omelet.—Take four eggs, two table-spoonfuls of bread crumbs, and one-half ounce of chopped parsley. After beating the eggs well, add the bread crumbs, then the parsley, and two table-spoonfuls of water; season, and fry in small fritters, and when cold, put them between slices of brown bread and butter.

(From the American Herald of Health.)

SUPPER DISHES.

1. Potato Puffs.—Take cold roast meat—beef or mutton, or veal and ham together—clear from gristle, cut small and season with pepper and salt and cut pickles (if liked); boil and mash some potatoes, make them into a paste with an egg, and roll out, dredging with flour. Cut round with a saucer, put some of the seasoned meat on one half, and fold it over like a puff; pinch or nick it neatly round, and fry it a light brown. This is a good method of cooking meat which has been dressed before. 2. Bruise into a saucepan $\frac{1}{4}$ lb. cheese, 2 oz. butter, a pint of water, with a little salt; boil gently, adding by degrees as much flour as will thicken it; let it dry on a stove until it is like thick new butter; then add either two or three eggs and a little cayenne.—*Exchange and Mart.*

AN EXCELLENT MODE OF COOKING SALT FISH.

A mode of preparing salt fish—cod, ling, hake, or torsk—for a breakfast or supper dish, very commonly practised both in the East and West Indies, but little known in this country, is to tear the fish, after it has been well boiled, into small shreds by means of two forks, one held in each hand, and then to fry it with a little dripping of roast meat or with fat of any kind. An extremely palatable dish is thus prepared, which has also the merit of being very cheap. Pepper or mustard may be added, if desired, or an onion cut into small pieces may be fried with it. Care must be taken not to use too much fat in frying the fish, as it ought to be dry and crisp when brought to the table. Cold salt fish, left from a former meal, may be economically used in this way; but both in the East and West Indies this dish very commonly appears at the tables even of the wealthy.

NOTES OF THE MONTH.

The Prevention of Adulteration Bill has shared the fate of many other innocents, and has been withdrawn after a short-lived, fitful existence. Although carefully nursed by Mr. Muntz, its reputed father, nothing could save it, and it expired from sheer impracticability, having lived and died in hopeless idiotcy, as it deserved. We trust that the Government may yet be brought to perceive that the framing of a proper measure for the protection of the health of her Majesty's subjects is not derogatory to its legislative dignity; and we hope that the Home Secretary may never see the day when dyspepsia claims him for its own—the victim of coppered bread or silkworms in his tea.

We have received an interesting communication from Bolton, Lancashire, on the investigations which have been recently made into the food supplies of that town by Mr. Collins, the borough analyst. Out of 71 samples of various provisions, 39 were adulterated, or about 53 per cent., a tolerable average for a well-to-do country town. The adulterations were as follows :—

Milk	..	..	..	17	samples	..	..	..	adulterated	12
Bread	..	..	..	11	,,	..	..	..	,,	5
Flour	..	..	..	16	,,	..	..	..	,,	6
Butter	..	..	..	8	,,	..	..	..	,,	7
Tea	..	..	..	13	,,	..	..	..	,,	7
Beer	..	..	..	5	,,	..	..	..	,,	2

In the milk the sophistication was effected with water, varying from 10 to 60 per cent. One sample, which had been adulterated to absolute attenuation, was "brought up" by the addition of a coagulable matter from scalded milk. The bread was adulterated with alum, rice, potatoes, and starch; and even out of the "pure" flour samples, 4 were unsound, and 2 of inferior nutritive quality. The butter contained water, a large excess of salt, and a quantity of rancid, fatty matter. Three of the tea samples were coloured and fired, and four contained old tea leaves and rubbish. It must have been a source of regret to the Bolton people that Mr. Muntz's last Bill of immunities did not succeed in passing. When we read, in addition to this disgraceful catalogue of dishonesties, that 14,960 lbs. of bad meat were seized during the last year, we do not know whether to congratulate the inhabitants of Bolton on having such a vigorous sanitary committee, or to condole with them in having such an abominable set of provision dealers.

A correspondent from Cardiff (G. S.) calls attention to the universal neglect of Indian meal, "which has nearly three times the nutriment of meat, and can be bought in quantity at about 1*d.* per lb." He gives the following recipe for cooking it :—"Put 1 lb. into two gallons of boiling water, let it simmer for at least two hours, and, when done, add ½ lb. of grated cheese, 3 oz. salt, ¼ oz. of mustard, and a lump of butter, to be boiled up together. Or, instead of cheese and butter, place it in a layer in a baking tin, and put over it a little gravy and some slices of sausage. Cover it with more meal, put a small bit of butter on the top, and bake it for twenty minutes, when it will be ready for serving."

It is rather a significant fact that, in the last commercial report from America, we find that an enormous exportation of lard took place to this and other countries. No less than 48,101,997 lbs. were exported, of the value of 6,050,507 dols. It would be interesting to ascertain, if possible, how much of this we have eaten in the shape of butter.

It is stated in the *Medical Times* that Mr. Smee, in a recent report to the Gresham Assurance Company, on the causes of death in 1,000 cases where claims had been made on the society, expresses his belief that diseases of the digestive organs greatly exceed in England the relative number found in other countries. This can scarcely be a matter of wonder when we reflect how utterly void we are of care or curiosity on the subject, and that our rulers are even more oblivious than ourselves. In fact, the duty of an Englishman of the 19th century is to fill his stomach—with what, it does not matter—and we are often inclined, under the circumstances, to envy the inhabitants of Skitzland, who, when dinner time came, handed their empty stomachs to the waiter, and received them again full.

A curious fact is reported from South Australia. Some families in Adelaide suffered severely, after eating certain joints of mutton, from great prostration, violent sickness, and pains in the bowels. On inquiring into the matter, it was found that a number of sheep had been feeding on the wild cucumber or "*colocynth*," the native melon, and the "*lotus Australis*," all of which are poisonous, and the animals themselves are said to have died within half-an-hour of their feeding on these plants.

An instructive guide-book might be compiled of the large and handsome industrial establishments constantly being erected in London, very much to the improvement, both social and sanitary, of the neighbourhoods in which they are situated. As affecting the supply of an article of the greatest importance, we would call attention to a fine range of buildings lately opened at King's Cross by Mr. Baker for the sole purpose of storing Whitbread's stout, of which he is the sole agent. The arrangements, as regards ventilation, roominess, modes of reception and supply, are exceedingly happy; and the establishment is well worth a visit, if only to notice the alarming amount of beer that it is necessary to keep in stock. Beer-drinkers are not a little interested in the matter, for it makes all the difference to the consumer whether his ale or stout is housed with the necessary care and scientific knowledge.

NOTICES OF BOOKS.

"Sheep: Their History, Management, Diseases, and National Value." By William Reid, Wool Broker, etc. (Edinburgh: William P. Nimmo.)—We have here a good and brief treatise on sheep, by one whose life-long experience well qualifies him for writing on the subject. Mr. Reid begins by noticing the wild kinds of sheep found in different parts of the world—the Argali, the Mufflon, the Aoudad, the Musmon, etc.; and then, but still very briefly, describes the principal varieties which form the stock of sheep-farms in Britain. He points out the special adaptation of different breeds to different localities, as to lofty mountains, high hilly districts, sea-exposed flats, chalky downs, and rich lowland pastures, and makes valuable suggestions concerning their improvement by crossing or otherwise. From his own experience he recommends endeavours to improve each breed by careful selection rather than to change the breed by crossing, of which, he says, the results are often far from satisfactory. We observe with interest that he objects to the common practice of enclosing a portion of a turnip field by *flakes*, and allowing the sheep to consume the turnips there, as wasteful; and advocates the storing of turnips and the regular distribution of them to sheep during winter. From our own observation, we have no doubt that he is right in condemning the practice referred to, which is slovenly, and altogether unworthy of the present state of husbandry in Britain. We shall probably revert to Mr. Reid's book, but, in the meantime, we cordially recommend it to the notice of our readers.

THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS.—Part XII.

On Provisions and Markets.

There are few countries in which the laws affecting provisions and markets are so well defined as in America, and this careful legislation is to be observed through all the States. In Buffalo the only enactments in the city bye-laws affecting live cattle are contained in three clauses, imposing penalties "for the slaughter of calves under four weeks old; for the sale of bruised or diseased cattle, sheep, or hogs; for placing in any meat market any calf, sheep, lamb, or other animal with its legs tied, or for tying any such animal to any post, fence, or tree in or about any such market." No meat is to be placed for sale outside the public market, except venison, wild game, or "pork in the hog," unless by special licence; and the exposure of any meat in an unwholesome condition entails a forfeiture of the same, and a penalty of $25. The same penalty is incurred by selling fresh meat on Sundays. No fresh fish can be sold in Buffalo between 1st of April and the 15th November (the Lake fishing season) without a licence, and such sale can only take place in the regularly established fish markets of the city. But this regulation does not affect the sale by fishermen to licensed dealers, provided it is completed within two hours of the fishermen's arrival in the city. Farm and garden produce, such as poultry, eggs, cheese, butter, and vegetables, can only be offered for sale by those who have actually raised the produce, by those who have themselves purchased it at the farms, or by dealers who have bought it in the city after nine o'clock a.m. All dead poultry must be "drawn," and the crops and heads taken off prior to the exposure for sale; and a penalty of $10 is incurred by every act of infringement of this regulation. Within certain limits, the town council grant licences for hawking fresh meat and fish about the streets. This licence costs from $10 to $25, and the hawkers are moreover compelled to execute a

bond in a penal sum of $100, with sureties, for the faithful observance of all the ordinances of their trade.

The supervision of the market is maintained by a "clerk of the market," who is balloted for annually by the town council, and receives a salary of 300*l.* a year. His duties are to open and close the markets at any hour which the mayor is pleased to appoint; to mark out those portions of ground in the open space around the market buildings, where alone farm and garden produce can be exposed for sale; to visit from time to time the different meat stalls, so as to keep a constant watch upon what is exposed for sale. He also collects the rents of the stalls and stands, and has to make regular returns to the town council. Incidentally we may mention that a curious habit prevails in Buffalo, of selling beer by weight instead of measure, and this is perhaps explained by the extreme frothiness of the "lager" beer. The quart measure in ordinary use holds about a quarter of a pint less than the English quart; and the ton weight is 240 lbs. less than the English ton.

In Mobile there are no very special laws as to the sale of meat, fish, or farm produce, except a somewhat stringent one forbidding the sale of any tainted meat or fish, or any that has not been killed in the usual way. The fine for this offence ranges from $20 to $200, and the culprit may also be imprisoned in the county gaol with hard labour for six months. The same risk is run by any baker who exposes for sale bread made of sour or unwholesome flour. The markets are under the supervision of the same kind of official as at Buffalo, except that he has slightly larger powers in the way of deciding all disputes which are not very serious between the buyer and seller. The city also maintains an inspector of flour, whose duty it is to visit the flour-mills or stores, and to brand the flour when imported, according to its quality and class. There are also inspectors of beef, pork, and fish in barrels, with corresponding duties.

The incorporation of Charlestown, in 1783, conferred upon the city council all the powers and authorities which by law had been previously vested in a quasi-corporation called the "Commissioners of Markets," and the general management of the markets has since been defined by city ordinances. No meat is permitted to be sold elsewhere; but the fishermen are allowed, on payment of a small sum, to hawk their fish about the city. The commissioners have ample power to remove from the stalls any "poor, carrion-blown, puffed-up, or unsound meat, or measly pork," and to fine the seller thereof $20.

The same powers are given to the officers of the market in

Savannah, and the penalty for infringing the law is 30 dollars. There is throughout this state very well-defined legislation respecting provisions generally. It is not legal to take oysters in any water in Georgia with scoop, drag, dredge, or by any other instrument than the oyster tongs. The penalty for violating this law is the forfeiture to the State of the boat, vessel, tackle, and furniture. Planted oyster beds are protected, and no one but the planter may take them under a penalty of $50 to $500. Neither may turtles or terrassins be taken within tide-water at any other time than between May 1 and September 1 under the same penalty. No seine may be used on any river of the State by owners of lands or lessees from Saturday at sunset to sunrise on Monday—lease and leave to fish to be recorded. An infringement of this law is punishable by a fine of $200, which is applied to educational purposes. Owners of land may take fish opposite their banks. All civil officers may visit and search all vessels, covered flats, or boats engaged in fishing, and may cause offenders to be committed and bound over. Butchers are compelled, under a penalty of $30, to take the head and hide of every animal that is slain to the clerk of the market, who is himself liable to the same fine, if he neglects to take the marks thereon.

No butter or vegetables other than the growth or manufacture of the States of Georgia or South Carolina, are allowed to be brought to market; no cod-fish, mackerel, nor salmon are to be sold without a licence, the cost of which is $15. The following is the tariff of the market stalls, which are always let on the first Wednesday in December:—

Common Beef Stalls	.. ..	$5,700 per annum.
Other ditto	.. ..	$5,200 ,,
Common Meat Stalls	.. ..	$2,850 ,,
Vegetable Stalls	.. ..	$2,500 ,,
Outside Stalls ..	.. ..	$1,500 ,,
Coffee Stalls ..	.. ..	from $6,000 down to $20.

At the time of sale no bids are allowed to be received save those of butchers, vegetable or provision dealers. The payment for the rent is made in cash.

(TO BE CONTINUED.)

THE report of the Derbyshire Associated Dairies shows that their first year's experiment has been successful on the whole, and that the American system has so far answered in England that it has every probability of not only being continued, but extended. The contributors of milk have realised good prices for their produce, while the quality of the cheese made has decidedly improved, and, what is a hopeful feature in the transaction, everybody seems satisfied.

SOME RESULTS OF THE SIEGE OF PARIS.

The Siege of Paris naturally caused the scientific world to give attention to the utilisation of many substances which do not enter into ordinary alimentation, and the results achieved and the opinions elicited in connection with these substances can scarcely fail of teaching the world some useful lessons.

M. Payen some time since read a memoir before the Academy of Sciences on—"*Hippophagie, graisses, et substances gélatineuses, huiles alimentaires des tissues et des os du bœuf et du cheval.*" After some observations on horseflesh as food, M. Payen proceeded to a comparison of the substances which may be extracted with economy from the bones of the bullock and horse, and more particularly of the greases contained in the different parts of the skeleton of those animals. The comparative examination of the adipose tissue between the muscles, of the tubular portions of the long bones, and of the enlarged ends of these same bones to a certain distance from the articulations, has revealed the remarkable fact that the fatty matter extracted from each of these sources in the same animal has a different point of fusion to the other two, and that the difference is still greater between the greases of the two kinds of animals. These differences depend doubtless upon the proportions between the oleine and the neutral fatty matters which, when isolated, are solid at ordinary temperatures. The following are the points of fusion presented by the fatty matters derived from the various parts of the ox:—

Grease extracted from the adipose tissue between the muscles..	35 to 40
,, ,, ,, femoral bone	46
,, ,, ,, the spongy end of the same bone.. ..	32·5

The grease was extracted in the last case by cutting the thick end of the bone transversely into thin slices, and submitting these to the action of boiling water. The grease floating on the water was allowed to purify itself there, the temperature being kept sufficiently high to maintain the fatty matter in the liquid form. The results obtained were :—

Slices of bone when dried	62·09
Grease extracted	28·75
Water..	9·16
	100·00

The tubular bone taken from the middle part exempt from spongy matter, and only containing marrow, gave:—

A compact tubular bone	77·96
Grease extracted	18·95
Azotized cellules and foreign matter	3·09
	100·00

The fatty matter, which has such an agreeable odour when retained in the cells of the tissue of the marrow, although rendered fluid by a heat of 212° Fahr., having been kept several days in the cold state, exhaled a smell of tallow immediately after being extracted by means of boiling water. The industrial extraction of fatty matter by means of hot water, said M. Payen, yields a product of only 6 to 7 per cent., while the treatment by means of sulphite of carbon gives from 10 to 11 per cent.

The preceding remarks apply to beef greases only. Those of the horse present very different characters. The substance extracted from the adipose tissue of the horse is solid at 61° Fahr., but fusible at 63° Fahr. It has a very slight agreeable smell resembling apple. The oily matter obtained from the thick ends of the femur has also a slight smell of apple. It remains fluid even to 20° Fahr., but between 44° and 45°, when the temperature had been maintained for several hours in a tube three-fifths of an inch in diameter, it formed a translucent mass without any trace of crystallisation. In this state it seems to combine with its lubricating power a very slightly adhesive quality, capable doubtless of maintaining a useful contact between itself and the surfaces upon which it may be used. It would be interesting to ascertain its effect in reducing friction in clock-work and other delicate mechanism. The translucent condition gives place to complete liquefaction and transparency when the temperature is carried two degrees higher. The substance contained in the medullary tissue of the same long bones presents properties intermediate between the two preceding as regards fusibility. Consistent at 61° Fahr., it liquefies at 64°. It must be added that in the femur and humerus of the horse the spongy part extends considerably into the interior of the tubular bone, thus leaving but small room for the development of the marrow.

These greases have agreeable qualities, and may be turned to very useful account in alimentary preparations. They may be mixed in different proportions with mutton and beef fats, extracted in the fresh state, in order to alter their consistence and improve their quality at discretion.

M. Payen had previously addressed a note to the Hygienic Council of the Seine, on the methods of applying the fatty matter

and the azotised organic tissue of bones to purposes of alimentation. The qualities of the fatty matter obtained from fresh bones may be compared, he says, to marrow, when introduced into the *pot au feu*. This substance, he adds, may either be extracted by placing the bones under the meat in the saucepan, or by treating them separately. In the latter case the bones may be sawn up so as to preserve the thick tubular parts for manufacturing purposes. The immersion of these for a few minutes in boiling water will readily cause the marrow to escape when the bones are shaken. The other parts should be divided into three or four pieces, so as to give a number of outlets for the fatty matter, and the joints divided into slices. The same may be done with the spongy and thick ends of bones used in manufacture, and the grease extracted from all. The grease when separated from the water is suitable for all culinary purposes. It replaces butter better than other greases, for it is free from the smell of tallow. It is still more easily extracted from the cavities and spongy masses of the bones of the horse in breaking them up with a hammer or hatchet. The oil thus obtained is more valuable than that from the bones of oxen or sheep, as it is better suited for culinary purposes. This, as well as the oil obtained from the adipose tissues of the horse, when mixed with the comestible greases of beef and mutton, greatly improves these, and assimilates them to butter for cooking.

As to the organic azotised substance, the parenchyma, or osseine, contained in bones, this also may be advantageously used in alimentation. It is readily obtained by submitting the bones to the action of water containing one-fifth part of hydrochloric acid, which dissolves the mineral matters and frees the *os amollis*, as this substance is called in the gelatine works. All the thin and spongy bones presenting large surfaces to the action of the acid are adapted to this purpose. The internal bony structure of horns contains no adipose or extractive fatty matter, and may therefore be treated with acid at once. It had been said that the osseine could not be extracted from the bones of the horse in a state fit for food, but M. Payen exhibited to the Academy samples that were perfectly supple and translucid after having been prepared for three weeks.

The parenchyma of the horse presents some remarkable characteristics. It will not produce jelly in the same manner as that of the ox, but M. Payen found that by cutting it into narrow strips of nearly equal thickness, and arresting the action of the hot water as soon as the substance had swollen and become translucid, he

obtained gelatine as fit for alimentary purposes as that from the bones of the ox. In practice, the bones are sawn and boiled apart with a certain quantity of fresh vegetable matter, and a nourishing soup is produced, which during the siege of Paris was distributed gratis to the extent of about a hundred gallons a day.

The purification of greases has also given rise to much discussion and the production of useful information. The city of Paris had an establishment at work in the rue Saint Lambert, where the fatty matters from the abattoirs were treated by means of steam in half-a-dozen boilers, containing more than four hundred gallons each. The fat was turned, when boiling, into large receivers, where it was left for twenty-four hours to clarify itself, and was then placed in moulds, like butter firkins, before it cooled. Great complaints were made that this grease tasted like tallow, and it was admitted that by this treatment only the pure suet is really fit for culinary purposes. The use of the acid familiar to us before was introduced to carry off the unpleasant odours, and the clarified fat afterwards treated with water and carbonate of soda is said to have been superior even to the best suet.

There are not many people who will relish the idea of fish or fritters done in tallow. In Paris *huile de navette*, which I believe is identical with English rape oil, was often used in good houses for frying, but many people complained of an unpleasant *goût*. This may only arise, as M. Dubrunfaut says, from the heat not being carried high enough, or from the omission of the aqueous element, whether in shape of water sprinkled on the boiling fat by means of a whisk, or introduced by dropping a piece of potato or other watery substance into it. This is certain, that *friture*, whether of fish, vegetable, or farinaceous substances, done by a good ordinary French cook, is entirely free from any unpleasant odour or *goût*. Now it may not be known in England that among the most highly prized, if not the most favourite fats for tossing up potatoes *(pommes de terre sautées)* is our despised goose grease. It need not therefore cause great astonishment, if science should teach us to substitute tallow for olive oil or lard in our frying-pans.

G. W. Yapp.

Yeast may be preserved by mixing it while yet moist with powdered sugar. The yeast ought not to contain too much water, and there should be enough sugar added to make a thick syrup of the whole. A deficiency in the quantity of sugar and an abundance of water are likely to bring about a fermentation in hot weather. It has been recently proposed to mix pure glycerine with the yeast, instead of sugar. The efficiency of the preparation was tested, and found to be good after four months' (winter ?) preservation.

THE "AMATUNGULA" AND "KEI APPLE" (SOUTH AFRICAN FRUITS).

Having a familiar and personal acquaintance with both the "Amatungula" and "Kei Apple" of South Africa in the fresh state, I venture to offer a few remarks concerning them in that condition, by way of supplement to Mr. Jackson's interesting paper in No. 16 of the *Food Journal*, which draws attention to these fruits in their preserved state.

The "Arduiana grandiflora," which bears the Amatungula of the Zulu Kafirs, is an apocynaceous plant, belonging to the same tribe as the periwinkle (*Vinca major* and *minor*) of our hedges. It is a very beautiful stiff evergreen shrub, a few feet high, with dark glossy leaves, armed at the base with remarkable bifurcated thorns, which remain green until quite old. It grows in sandy and boggy places along the Natal coast in the close neighbourhood of the sea; the ivory nut palm (*phytelephas*), the wild strelitzia, and the aloe of various colours and forms being its ordinary companions. The fruit, which is correctly described as varying considerably in size, looks very much like a small plum, and has thence acquired for itself the name of the "Natal plum." It is reddish at first, but becomes of a dark violet hue as it ripens. When ripe it has a white milky juice, of an agreeable sub-acid flavour, and is very acceptable and refreshing during the South African coast heat. The milkiness of the juice is obviously due to the presence of caoutchouc, which is yielded in abundance by some members of the tribe. There are other plants in the family that are favourably known on account of their fruits. The *Carissa Carandas*, which elsewhere furnishes a well-known substitute for red currant jelly, is closely allied to the Arduiana of Linnæus.

But it must also be added that there are other members of this particular family which are by no means of so agreeable a repute. The *Tanghinia venenifera* of Madagascar, which is a sort of first cousin of the Carissas and Arduianas, has a fruit with a kernel not larger than an almond, which is so energetic a poison that one kernel is a deadly dose for twenty men. The Oleander, which is also of poisonous power, belongs too to this family. Indeed, this is one of the notable instances of the development of harmless fruit

by some members of a very baneful tribe. From my own experience I should be inclined to doubt whether the ripe Amatungula would be found to be altogether wholesome if very freely indulged in, although, on the other hand, I have never heard of any actual mischief following upon its use; but that it would be very materially improved as a fruit by garden cultivation, there can be no doubt. The wonder is rather that the fruit should be so good as it is in its rude state, than that it should have some questionable qualities. There are few wild fruits that have not a hair-oil and furniture-varnish essence of some sort to be extracted or dissipated by the refinements of horticulture, before they can be said to have become worthy of a place in the dessert as well as in the desert. In the case of the unrefined Amatungula the *soupçon* is certainly of the "waterproof" kind. If, however, this fruit ever have as much done for it by cultivation as the wild crab had, before it was turned into the Ribston or Newton pippin, it will most probably prove a valuable addition to our gardens.

The flower of the Amatungula is formed like that of our common periwinkle, but it is white, and very much smaller than the blue flower of the *vinca* of our hedges, notwithstanding the specific apellation "grandiflora," which for some reason has been conferred by the botanist upon the species. The flower is nevertheless very bright, star-like, and pretty when it appears among the dark glossy leaves. It is commonly seen upon the plant at the same time with the red and violet berries of the ripening fruit, and in some measure suggests the thought of the jasmine, until the eye detects the very curious armament of green forked spines.

The Amatungula is very commonly employed as a preserve by the Natal coast settlers, but this preserve is for the most part very coarsely and rudely made, and, as it is ordinarily seen, does not do fair justice to its capacity. When skilfully prepared it has a pleasant acidity, delicately touched with the peculiar flavour of the fruit, which gives it a fair claim to colonial favour, although it must be admitted that even then it stands a long way behind the raspberry, gooseberry, and greengage of Old England.

The "Kei Apple" is the berry of a plant belonging to the interesting family which produces ebony and the iron woods. It is a large evergreen shrub with small thick set leaves, and grows well in higher and colder districts than the Amatungula. It is, indeed, properly a member of the upland and inland bush. The shrub has hard wood, is of slow growth, and is of great value on account of the splendid thickset hedge which it forms, densely armed with strong dry spines three-quarters of an inch long, and as

hard and sharp as a needle. The well grown Kei apple fence is a barrier which no living creature will face. It is simply impenetrable, and in addition to its proper bulwarks it throws out outworks in the form of long straggling arms that are also bristling with sharp spines. It is a deciduous plant, having a tender light hue in the first spring, maturing in the advanced summer into the dark green of the beech, and occasionally almost assuming the sombre tint of the yew. The plant is also diœceous, some of the trees bearing only a stamen producing unconspicuous flowers and no fruit. When not trimmed and trained into a fence, the Kei apple developes into a very large tree. The plant is either a Diospyros, or a near ally to that genus. In common with all the Ebenaceous plants it has some affinity with the holly. Another species of the Diospyros genus, the Diospyros kaki, furnishes a well known Chinese sweetmeat.

The name "Kei apple" has been conferred in consequence of the fruit having been originally noticed in the neighbourhood of the Great Kei River, the stream which divides the old Cape of Good Hope settlements from Independent Kaffraria. The fruit is, however, quite as generally known in the Natal district as "Dingaan's Apricot," the second part of this designation being suggested by the woolly apricot-like aspect of the skin. Dingaan, who confers the other part of the name, was the brother and successor of the first great Zulu potentate, Chaka; and was also the chief adversary of the Dutch Boers, who occupied Natal before it became an English dependency. It is to be presumed that he was a patron of this fruit, as he has thus made it a present of his august name. But that he ever used it in any other sense than a medicinal one in those ante-saccharine days, when neither the cane not its sweet extract had yet put in an appearance in the Zulu Kafir district, is certainly very much to be questioned. Distilled vinegar is tame as an acid compared with the matured juice of the Kei apple. The Dutch settlers, indeed, prepare it for their tables as a pickle without vinegar, and it is by no means contemptible in that form. It is also, on this very account, a good preserve of the red currant jelly class, when prepared with a liberal hand in the matter of sugar, and a thrifty and prudent one in the matter of fruit. From my own personal experiences I am able to offer Mr. Jackson my warm congratulations that fate has allowed him to be innocent of the Kei apple in its fresh state. If he ever chanced to make an acquaintance with it in that condition, I venture to assure him that he will return to his first love, the Kei apple preserve.

The use of the word "apple," in regard to this fruit, very per-

tinently suggests some additions that may, and should be, made to the "Fruit list" of new edibles that are deemed worthy of notice in the pages of the *Food Journal*. There are other fruits not there named, which are now most valued acquaintances in every garden of Natal; not, however, indigenous, but introduced and naturalised productions. First and foremost, there is the most exquisite "Loquat," an importation into South Africa from some of the islands of the Eastern Archipelago. The Loquat is a small apple, just of the right size for a tolerably well developed human mouth, with a juicy pulp intermediate between the gooseberry and the peach, and with a malic flavour strongly inclined in the gooseberry direction. It has two or three large central pips, almost arriving at the dignity of stones. In fact, the Loquat is very much a small apple, that you can squeeze like a gooseberry, and that has a flavour more exquisite and delicate than the best apple of England. It is one of the most agreeable and refreshing fruits that can be encountered in a hot climate; and it has the great advantage, that it can be indulged in without any of those second thoughts that will come over the botanical mind when it contemplates the so-called harmless fruit proffered by some atrocious ally of Dogbane or Nightshade. The Loquat is the fruit of the *Eriobotrya japonica*, a true member of that honest apple family, whose worst perpetration, under the most unfavourable circumstances, is malic acid and rough cider. And a perfect glory of the garden is the *Eriobotrya japonica*, with its whorls of pendant dark green leaves, glistening white underneath, and fashioned upon the mould of the sweet chestnut. The flower is an enlarged copy of the hawthorn, with the true hawthorn fragrance, comes out from the centre of the leaf-tuft, and there ripens into large bunches of luscious fruit, looking like small golden pears, often of considerable size and weight. The tree is an evergreen, and has a curious habit of always keeping itself in the fashion of a trim standard.

The Amatungula, the Kei apple, and the Loquat, have proved such pregnant themes, that four of their Natal congeners, which are also of great interest economically, namely, the Granadilla, the Yellow Peach, the White Mulberry, and the Cape Gooseberry, must be reserved for another notice.

R. J. Mann, M.D.

Joubert combines meat extract with iodine and bromine, and recommends the combination in cases of chlorosis and consumption. Two gr. extr. carnis are mixed with 15 ctgr. kal. iodat. or kal. bromatum.

FEVER HOSPITALS.

The advantages of Fever Hospitals are far from being appreciated as they should be in England. The objects of these excellent institutions are misunderstood by the general public, and their establishment is not unfrequently opposed on the most frivolous grounds.

It has been imagined, for instance, that the existence of a hospital for infectious cases is *primâ facie* evidence of the undue prevalence of infectious disease, and as such ought to be discouraged; or, again, that fever cases are best left alone without being talked about to the alarm of weakly or timorous persons. There may be fever about, but they would rather not know it. Now a clear statement of the ends and aims of a Fever Hospital should dissipate such objections at once, and enlist the active sympathy of all who value health in their own families, as well as of those who guard the health of their poorer brethren.

It is true that the good air, wholesome food, and trained nursing of a fever-ward afford better chances of recovery than the closer atmosphere of a town house or crowded court, and this in itself is no mean argument in favour of special institutions for the treatment of infectious diseases; but the most important feature by far is the isolation, especially of first cases of disease, which can promptly be carried out by means of a Fever Hospital, and in no other way.

Whatever may be our belief as to the origin and communication of infectious disease, one thing seems pretty clear—viz., that the poison of small-pox, scarlet fever, typhus, and typhoid or enteric, may be seized upon, surrounded, as it were, by an impassable barrier, and prevented from extending to new ground in the vicinity. Like the prolific spore of some noxious quick-growing weed, the imported case of small-pox or fever may be taken up and cultivated with care, while at the same time provision is made for the destruction of such harmful products as might reproduce the parent form.

How many an epidemic of small-pox, for instance, which has advanced slowly and surely, step by step, from some low lodging-house until it has set its deadly foot in the houses of the wealthy, might have been arrested at its onset by the timely separation of the first infected individual from an unprotected community.

Again, to take scarlet fever: what innumerable and untold sources of infection might be done away with if the first sporadic cases

imported into a town could be isolated at once, and their homes cleansed by the usual disinfecting processes?

The laundress would receive no infected linen, for it would be dealt with in the proper place; the tailor would not send home to his employer clothes on which infected children had been playing; scarlet fever scales would not find their way into our milk; nor would tradesmen need to conceal the existence of disease from a dread of deterring customers and spoiling trade. The value of isolation and disinfection where fever occurs is now so well known that no medical attendant would dare neglect it altogether even in the poorest cottage; but the difficulties placed in his way, especially in large towns, are almost insuperable, and the chances are very much against him in his endeavour to check or stamp out the disease. A court may be deluged—garret, cellar and sewer—with chloride of lime or carbolic acid, the walls may be whitelimed and the bedding burned, yet the poison may triumph over all when the fever-stricken are still huddled with the healthy; while children are allowed to rid themselves of scarlatina scales in play with their fellows, or to carry them freely into the national schools. Nothing less than systematic isolation of the sources of evil, complete separation of the sick from the healthy, together with disinfection of all that has been in contact with them, can be effectual for the suppression of infectious disease.

In the houses of the wealthy, where ample room and conveniences exist, this may sometimes be accomplished without removal, but such cases are the few exceptions. In the higher-class lodgings of towns, or even in private houses, it is rarely possible; in the homes of the poor it is quite impracticable. Objections will doubtless be raised to the separation from friends at a time when danger threatens and life is imperilled; but surely the advantages of trained nursing, improved hygienic conditions, and increased chances of recovery are no mean arguments to place in the opposite scale, even if the public weal be ignored, and the idea of *duty to society* be scouted as Utopian in these days of so-called modern liberty.

With the rich it is even now the custom to isolate one relative or trustworthy attendant from the family during the continuance of infectious disease. Thrust out, not unfrequently to the first lodging that will accept him on any terms, the patient has to pass through the phases of his illness as best he may. In a stuffy, ill-ventilated apartment, with dirty hangings and carpets, infinitesimal windows, bad cooking, and often scant civility, he may indeed recover, but it will be up-hill work, and in spite of circumstances.

The contrast afforded by the clean, cheerful and airy look of a

hospital ward, with its neat attendant, must be seen to be appreciated at its true worth. No one who has known the comforts of such an establishment, either in his own person or through friends, would hesitate to seek them if assailed by disease, especially if arrangements were made, as they should be, where expense is no object, for the accommodation of a relative or a friend near the hospital or within its walls.

For the patients' own sake their removal to a hospital is desirable; it is no less so in the interests of friends and of the community. In a private house isolation is practically impossible. If we consider merely the laundry arrangements, this will be seen to be the case, and these are not among the most difficult to control. Every moment has its danger; a reversed current of ventilation may infect a household, and then no boundary walls or quarantine can check the poison; new foci are formed with fearful rapidity, and the alarm cry of an epidemic is raised—too late; the little leaven has leavened the mass, the small spark which could have been extinguished without an effort has become a devouring fire.

The prevalence of epidemic disease and its ravages are a standing disgrace to the sanitary legislation of England. With all our knowledge of the laws of epidemics, with all our literature on the subject, in spite of our convictions, in spite of the most positive proofs that infection may be checked, if not stamped out, by isolation, permissive laws administered by local authorities negligent, if not ignorant of their duties, allow small-pox and fevers to follow their course without more let or hindrance than the precautions suggested by medical attendants or nuisance inspectors, precautions which may be advised, indeed, from a sense of duty, but which they know it will be impossible to carry into effect.

This great work of stamping out epidemics remains to be done in England, and he who carries it through will save more lives than Jenner, and win a monument *ære perennius*. Dr. Budd, a good authority, puts the mortality from infectious disease in large towns at one-fifth of the whole—one death out of every five from all causes! and each of these deaths points to at least ten persons who have gone through the disease with more or less damage to themselves and those who surround them. To take shortly the three classes of disease over which Fever Hospitals would have most control, they are—1, small-pox; 2, scarlet fever and diphtheria; 3, fever—including typhus, enteric, relapsing, and continued fevers generally.

The yearly mortality in England and Wales from small-pox varies from 7,684 in 1864 to 1,565 in 1869. What it may be in the present

year time only can reveal, but the quarterly report of the Registrar-General has already recorded a contribution of 4,903 between the 1st of January and the 31st of March last to the annual roll of mortality from this disease, the very existence of which amongst us is evidence of culpable neglect and inefficient legislation.

Scarlatina again numbered its 21,912 victims, and diphtheria 3,013 in England and Wales during 1868; a sad array, indeed, telling of young lives sacrificed and widespread bereavement, but a mere index of the suffering, disfigurement, and lingering illness of too many who survive; for it is a low estimate that allows twelve cases of the disease for every death which we see on the register.

Lastly—fever, to which 19,701 persons succumbed in 1868, the average being about 18,000, with a mortality of one in ten cases of disease. A simple sum will give the number of survivors in each year, chiefly among the poor and at the working ages, who pass through a deadly sickness, a protracted convalescence, and in many cases a lifetime of weakness from which death alone can set them free. Who can tell the tale of suffering and want when so many heads of families are down with the fever, when so many mothers and children are rendered helpless by disease? It is with a view to check these frightful scourges that the establishment of Fever Hospitals is so strongly advocated by sanitarians.

Such institutions are to be found in some of the large northern towns, where a practical common sense has triumphed over the fears or the false economy of the many; one such, through private munificence, is shortly to be erected for the fair town of Cheltenham. Let us hope that the enlightened examples thus set may in time be followed in all centres of population, and that strict isolation of the fever-stricken may eventually take its place among the ordinary requirements of preventive medicine.

E. T. Wilson, M.B.

New Ice-making Machine.—Messrs. Nasmyth, Wilson, and Co., Patricroft Foundry, near Manchester, have lately made for Mr. F. Label, of 21, St. Nicholas-lane, London, an ice-making machine on the principle of the patent of M. Mignot, of Paris. The low temperature of compressed air, when allowed to dilate, has long been known as a scientific fact. The principle of the machine appears to be to force this compressed atmosphere underneath and all round metal moulds, filled with water, which are placed in a cylindrical compartment, which communicates with an air-tight box. The difficulties which have formerly prevented the adoption of this method, are, it is said, overcome by means of injecting cold water with the air whilst it is being compressed. The machine, working at a pressure of 60 lbs. to the square inch, produces 50 lbs. of ice in an hour. There is no expense for materials by this process, as atmospheric air and cold water are the only essential requirements of this ice-making machine.

TEA.

The occasional seizures of spurious tea will have the effect of exciting the attention of the public, who should naturally be alive to anything concerning the adulteration of food, and more especially with regard to that universal beverage, tea. It is not the poor alone who are concerned in this matter, but the rich also, who have become most critical of late as to the quality of the tea which they consume so largely. The recent disclosures are certainly most startling, and many will take for granted, that, while seeking the cheapest tea for the sake of economy, they have been victimised to a certain extent.

It is not, perhaps, generally known that of late years, owing to the great demand for tea, and the difficulties attending its cultivation and transport, caused by the general disturbance throughout China, an inducement has been held out to the Chinese of the lowest class to resort to the practice of preparing the used tea-leaves so as to make them resemble the marketable tea. To a low-class Chinaman, such a proceeding was quite in keeping with his natural ingenuity, and there was no difficulty in collecting an unlimited quantity of used tea-leaves from the tea houses, which are as numerous in a Chinese city as the publics are in ours. I have frequently seen in my rambles through Shanghai large quantities of these tea-leaves in process of drying, and otherwise being prepared for sale to the foreign merchants. Though it was impossible to get any precise information how this was done, it struck me from always observing large quantities of buffalo droppings heaped up in the drying yards where the tea-leaves were spread out, that this ingredient was largely used to impart colouring-matter and flavour to the leaves so as to make them resemble black tea, and probably the mass obtained an addition of weight from the clay of the floor on which it was spread. No doubt tea-leaves so treated in unfavourable conditions of the weather —the drying was done in the open air—would cause a certain amount of decay or breakage of the leaves to take place, but otherwise there would be little difficulty in making the tea-leaves assume once more the appearance which they presented before infusion. I also had frequent opportunities of noticing that green tea was prepared in an almost similar manner, with this difference,

that instead of using buffalo droppings, which would impart a brown colour, the leaf, being originally the early growth of the spring, and not the usual matured leaf of the tea plant, it was "renovated" by means of some acrid bitter fruits of a species of unripe Rhamnus, etc., which were cut up and thrown into the heap of damp leaves and allowed to remain in it for a certain time. They were afterwards withdrawn as soon as sufficient bitterness was imparted. The tea-leaves were then submitted to a process of drying, rolling, etc., so as to make them resemble, as closely as possible, the green tea of commerce.

The appearances of the tea examined by Drs. Letheby and Stenhouse may be thus accounted for. Of course our tea merchants in China are fully aware of these and doubtless many other rogueries of the Chinamen; but the great competition for trade, and the eagerness to realise the utmost profits by every possible means, now so much in vogue amongst all but the most respectable of the merchants, induce them to traffic in such suppositious articles, of the existence of which the disclosures now made public are but the sad evidence. Unfortunately there is much facility for this kind of questionable practices in the tea trade. Tea is the most complicated food product that we consume, and did we know all the preparations, mixtures, roastings and re-roastings, sortings, etc., which it undergoes from the time when it was collected from the shrub growing on the Chinese hills to its final infusion in the tea-pot, we should be no less amazed at its history than at the intricacies of the trade which brings it to its ultimate destination.

But notwithstanding Chinese roguery, we need not be afraid of being always imposed upon in buying our tea. There is still good tea produced in China. There are merchants who import it in an unadulterated state, and there are honest tradesmen who sell it.

CHA.

WE are pleased to learn that at the last Quarter Sessions for the county of Worcester, Dr. A. O. Davies, of Manchester, was appointed Analyst for that county. In the county of Lincoln, too, Dr. G. Lowe has been appointed Analyst for the division of Lindsey.

EXPORT TRADE OF THE UNITED STATES (FOOD).—The Board of Trade in its official return of the foreign trade of the United States for the past year states that the export of wheat declined from 34,345,708 bushels to 33,547,637 bushels, and wheat flour advanced from 3,208,743 barrels to 3,357,287 barrels. The exports of cheese increased from 51,930,337 lbs. to 59,113,090 lbs. The export of hams and bacon declined from 52,379,552 lbs. to 24,645,896 lbs., but pork advanced from 18,121,361 lbs. to 29,256,213 lbs., and lard from 35,087,718 lbs. to 40,191,997 lbs.

THE FOOD INQUIRIES OF THE SOCIETY OF ARTS.

The Society for the Encouragement of Arts, Manufactures, and Commerce, in its more than century of existence, has laboured out many parts of its wide programme. It is a society founded, like the old Netherlands Society, "Tot Nut den Algemeen," for the general benefit and advancement of the community at home and in our colonies. Of course the promotion of the national agriculture, and of the supply of food, has always been an object of the Society of Arts. At a time when there was no agricultural society in the country, and while Arthur Young still laboured to diffuse information, the programme of the Society of Arts always included agricultural implements and agricultural processes, and prepared the way in the last century for that development of agricultural societies in our day which has rendered unnecessary many departments of the Society's exertions.

During the great famine at the beginning of the nineteenth century, the Society co-operated in the general effort to economise and increase the food of the community. These efforts have been continued to the present time, more or less assiduously, as the various claims on the attention and funds of the governing body have permitted; for it has not always had its present large income and powerful organisation, but has been more than once in danger of extinction. Societies that have a long life sometimes become like Gulliver's Struldbrugs, blessed with immortality, but in a stage of helpless inanition. Such has betided the Society of Arts, but then it has ever and anon been restored to activity, and now to greater vigour than at any former period.

Besides other services to agriculture, such as the prize for stacking corn in wet weather, the Society, some time ago, constituted a Food Committee. This committee has been doing, on a small scale, what an efficient government administrative department should do in a larger way. It has examined into the supply of fish and that of milk. The former has within three-quarters of a century employed more than one parliamentary committee, and the Society's Food Committee found, as the other committees have done, that fish is plentiful in the sea and is cheaply caught, but by bad organisation the price is so enhanced to the population that its consumption is discouraged.

At the same time the committee has elicited that the quantity of fish now supplied is very much larger than at any former time. This is necessarily an effect of improved transport. Until a generation ago, fish could only be brought to market by the fishing boats, and then not unless with a fair wind. In the beginning of this century the parliamentary committee had under consideration the establishment of fish vans from Brighton. By the help of the new turnpike-roads this was accomplished, and it is to be observed that the turnpike-roads also assisted in the distribution of fish in parcels throughout the country on a small scale. When the York flying coach made its wonderful trips of forty miles a day fish parcels were few, for their smell would have driven the outside passengers from their roost in what was called the "basket." Palmer's stage coaches, by supplying squires and innkeepers with cod and turbot, distributed food, and also brought up river fish, Severn salmon, and Derbyshire trout.

It is the essence of fish supply that it should be distributed quickly and in a fresh state. A rate of four miles an hour during the day, with a small coach, afforded only a small area; but a rate of ten or twelve miles, worked continuously throughout twenty-four hours, greatly enlarged the area of distribution. The fish vans were, however, a costly conveyance, and their total yearly produce was comparatively small. Therefore, the smacks were the main resource, but it was hard work for a smack to get up the Thames with the chances of wind or tide against her. For days the supply of fish to London would be stopped by unfavourable winds.

The next important thing was to become master of the wind. The steamboat did this. Occasionally a smack was towed up by a Margate steamer, and then came the time of steam-tugs. The great help was, however, derived from the energy of the Yarmouth merchants in sending steamers to the fishing grounds to collect fish for market. At first the efforts to bring fish to the shore were checked by the want of means of transport to market from the point of arrival. Then came the sway of the railway, and without any very careful organisation the railways have afforded means for a most extensive distribution of fish to parts of the country heretofore deprived of this article of food.

It was at this stage that the committee of the Society of Arts stepped in, and so far as its means extended did much good. It roused up the railway managers and the fish factors in the markets, hearing evidence and publishing it in the Society's Journal, in a manner corresponding with a parliamentary committee. Here, let it be noted, that the *Journal of the Society of Arts* is less influential

than it might be in its action on the public, because practically it is not sold to the public, its circulation being restricted to the members. Although this is to the extent of several thousands among the leaders of public opinion and among journalists, it is not so effective as would be a large public circulation. It is, therefore, very much to be desired that the sphere of the society's exertions should be extended by the free sale of its journal.

A practical matter, however, that resulted from the conferences with the railway managers was the offering of a prize for improved fish, meat, and milk-vans, which led to some valuable models being sent in, and called attention to this part of the subject. The conveyance of food has indeed not received sufficient study. Bacon or cheese can be conveyed readily from the United States to this country by steamer and by railway, and its transport does not suggest any difficulty. The conveyance of meat by ship is, however, a far different thing, and may be said to have come into notice only lately. The Americans, from having to deal with a considerable tract of hot country, have done more than we have. Various attempts have been made to provide cool air and to refrigerate by means of ice. Experiments have been extended to steamers and sailing vessels, and a foundation has been laid for practical results. The time will come when the ice-room of a ship will be an essential appendage to enable it to take part in the traffic of many parts, and it is not difficult to foresee that by means of refrigerated railway trains and ships many classes of eatable produce, not now available, will be moved over large distances.

In this respect the various labours of the Food Committee will be useful, not only at home, but abroad, and will do very much good. In some cases where the benefit is not immediately felt at home, it will be directly conferred on others, and indirectly on ourselves, by improvements carried into operation in India, in Australia, or in South America. Wherever food is economised, particularly animal food, it is a positive addition to the general stock. An example may be obtained from the proceedings of the Cotton Supply Association. Some of the cotton produced by the exertions of the Association during the cotton famine, as in Turkey for instance, never came into the English market, but went direct to France, Italy, etc.; but the result was that the pressure in the English market was reduced, and there was an effective supply. In some cases a better distribution of local food will stimulate production of various articles for our own market. This was memorably seen with regard to the same article of cotton. Cul

tivators in India and Egypt found it worth while to substitute cotton for food crops, because by improved means of conveyance and more liberal earnings they could more conveniently obtain food from other districts.

The Food Committee may be tested in the value of its work by this circumstance—that its labours are producing wide results. This is well enough seen in the department of preserved meat. Here naturally it is not home production which is to be stimulated, but that of our colonies. The committee has therefore most practically co-operated with scientific men at home and with men of enterprise in the colonies, by receiving information, by testing, making experiments, and by analysing specimens which have been sent to it, and by publishing its reports. It has afforded to men at home and abroad the especial advantage of having a recognised centre of reports for this particular subject. Here again comes the natural comment that fitly as the Society of Arts undertakes this part of its functions, it would be more properly discharged by a public department under a Minister of National Economy, or whatever the designation might be. There is a President of the Poor-law Board, and rightly too, to look after the relief of paupers; but surely it is of still greater national concern to look after the well-being of those who are not paupers, and to save them from pauperdom. An increased supply of animal or bread food in some seasons means the preservation of the working heads of households and those dependent on them from the necessity of seeking out-door or in-door relief. To seek poor-law relief is infallibly to cast a burthen on the rates for weeks or months, because the diseased labourer does not recover his health by the receipt of a workhouse loaf.

So far from the Government undertaking work done by the Society of Arts, it is the Government which resorts to the Society. The Government in its many departments is a great consumer of preserved meat, of which, indeed, it is also a manufacturer; and thus it is led to resort to the Society of Arts for information and co-operation. There can be little doubt that the independent action of the Food Committee has materially assisted the purposes of the Admiralty in improving its own preparations at Deptford and in obtaining better supplies from without. The committee have indeed systematised to some extent the operations of the Admiralty and the Colonial Office in their promotion of colonial meat preserving. The proceedings of the committee have often been of a limited and unobtrusive character, but they have supplemented the larger action of the Government departments. The Government is also likely to obtain a better article in preserved

meat by being put in competition with the private producers, and by being led to abandon the practice of taking essence of meat from the preserves, and serving out the remnant as sufficient food for the seamen. By this strange course the sick obtained the substance of the meat, while the healthy had the chance of coming to essence of beef as a medicine by being deprived of it in their daily food.

The movement now taking place in the Australian Colonies, more particularly to obtain the best processes for preserving, is being materially assisted by the Society in the ways here pointed out. There are many claimants for public favour, and a long course of experience is necessary to determine the relative merits. Indeed, there are so many qualities desired in any process, that in Australia the machinery or process must be simple, and produce an effective result. Then the article must be in a convenient state for handling or shipment, until such time as special appliances can be obtained on shipboard. Further, price being satisfactory, the meat when introduced into England must be good-looking and inviting; it must admit of being readily cooked by the common appliances of the working classes, in the usual way, and in a short time. When served up at table, it must smell well, look well, and be palatable.

Few of the processes answer all these tests, but they must not be neglected. There is ragged meat, which may come in for soup; there is meat with a subacid flavour, very wholesome, and which will be acceptable to hungry people, who cannot get any better food. The great mistake which is liable to be committed is this, to expect that preserved meat, even when presented with the appearance of freshness, can ever compete with the fresh meat of this country; but, in truth, there is no necessity that it should. The working classes of this country do not live wholly on fresh meat. They freely consume salt beef and pork, bacon, ham, dried and salt fish, and there is an opening for preserved meat at a moderate price as an addition to the food supplies of the country. If the quantity of bacon imported could be doubled, it would be a great boon, but it will be a still greater boon to obtain increased supplies of colonial meat, which may approach more nearly in character to fresh meat. This is a practical attempt, and in the promotion of this, and many other kindred enterprises for the national welfare, the Food Committee of the Society of Arts is doing great good.

Hyde Clarke.

"THE LONDON UNADULTERATED FOOD COMPANY (LIMITED)."

THERE appeared in a recent impression of the *Times* an extract from an American paper, which, while it was exceedingly bitter on the roguery universal among the trading community on that side the Atlantic, was, if praise unmerited be really, as is affirmed, the most bitter of satire, equally severe upon us. For while justly animadverting upon the laxity of his own Government in winking at, if not encouraging, the custom universally prevalent of cheating and defrauding by the sale of adulterated goods, the writer went on to contrast the very different state of things which obtains in England and the other worn out countries of Europe. Such practices, he affirmed, would not be tolerated there for a single day. We are naturally grateful for the good opinion entertained and expressed of us in this article, but we must confess with shame that, far from being entitled to it, we are ourselves very great sinners indeed in this matter. It is possible that our cousins may be greater rogues, *i.e.*, "smarter," than ourselves in adulterating almost every known article prepared for human consumption, but we certainly cannot lay the flattering unction to our souls that we are therefore blameless. On the contrary, the habit—system is the better word—of defrauding the public by the sale of spurious articles of food is, as we have repeatedly shown, if not as gigantic, certainly as common, in England as it possibly can be in America itself. What is worse, it is largely on the increase; so much so, that it is next to impossible, at least in the poorer und more densely populated districts of great cities, and in the various villages and hamlets of these islands, to obtain a pure sample of things which Nature originally made for man, or which Art and Science have developed from the ever-bounteous stores of our common mother Earth.

It is rather curious, too, that this great increase in the dishonest practices of many wholesale and most retail tradesmen should have set in with redoubled force, as if in mockery, ever since the inquiry ordered by Parliament in 1855 proved by the experiments and testimony of our best analytical chemists, that adulteration was even then carried on to a most alarming extent. So great was the outcry raised—ephemeral as most outcries are—against the iniquitous practice, that a company was forthwith started, heralded by very high-sounding promises, and cordially received by the

entire press, which promised us that the reign of adulteration might be considered at an end from that time; if people thereafter chose to be poisoned it was of their own free will or from their own unpardonable neglect, inasmuch as by purchasing their goods, which included everything eatable and drinkable, from this establishment, which was styled the "London Unadulterated Food Company," and boasted a capital of 100,000*l.* sterling, they might avoid all those ills arising from devouring articles unfit for human consumption. In the prospectus which this sensible and public-spirited company put forth, attention was called to the long list of respectable names by which the honesty and energy of the said company were guaranteed. Trustees, directors, bankers, solicitors, general manager, and chief analyst, all were of the first water, men of standing in commercial and professional circles. Of this admirable society the whole London press hastened to vie in praise and commendation. "If there is any doubt," wrote the *Leader*, "of the success of this undertaking, there must also be a doubt of the common sense of the English people." One would certainly think so. "A company organised," said the *Post*, "under the most respectable auspices for the reparation of a great social evil *must* answer well as a commercial speculation."

"Anybody," said the *Times* in a leading article, "determined to sell genuine articles of food would be certain to make a fortune;" and the *Court Circular*, to wind up with perhaps the severest comment of all, contained the following passage: "With a vivid recollection of the iniquities which were brought to light by the Parliamentary Adulteration Committee, we have the Unadulterated Food Company as a godsend in this huge capital, and most heartily do we wish them God speed. It is a great comfort to feel that at last there is a fair prospect of escaping the hands of the poisoners, and of obtaining food that is neither deadly nor disgusting."

Such was the state of things acknowledged and openly proved in the years 1855-6—fifteen years ago in fact. It is a fair and natural question to ask—What has become of this highly-promising "London Unadulterated Food Company?" Is it still in existence? Was it ever in existence? Are the shareholders netting their 15 per cent. at least, and quietly holding their tongues about it? If so, may we venture to inquire as to their whereabouts, that we may assist them in contributing to their dividend, and at the same time "escape the poisoners, and obtain food that is neither deadly nor disgusting?"

J. M. S.

INDIAN TEA.

No. 4.—Merits and Defects, etc.—(Continued).

The objections applicable to Darjeeling are intensified at Kumaon. Its latitude being higher, greater cold prevails. The original error consisted in the now exploded idea that sub-tropical plants could be forced into bearing without regard to the laws which govern vegetable physiology; that the tender indigenous Assam shrubs, which wither away at the slightest approach of frost, could be taken from the hot moist atmosphere of Eastern Bengal, and reared successfully amidst the hail storms of the Himalayas. Nevertheless, there are sequestered valleys among the mountains, such as the lovely vale of Kuttyoor, where even the Assam shrub grows, and which are admirably adapted for the China variety. That the elements occasionally rage among the adjoining heights, with a fierceness happily unknown in temperate climates, may be gathered from the fact that on the 11th May, 1855, during a storm, hail-stones twelve inches in circumference fell. Although there is no actual necessity for the importation of labour to this district, wages rule high, and sometimes a difficulty is experienced in getting the coolies to work in the gardens, so many being employed in the more congenial labour of carrying the tea to the base of the mountains. Some of the gardens being eighty, the bulk of them fifty, and a few about twenty miles from the plains, the tea produced struggles under the greatest disadvantage, in respect of cheap conveyance, of any in India. On the other hand, there is a large local demand, and common sorts realise *1s. 6d.*, and the finest quality sometimes as much as *4s.* per lb. on the spot. The high cost of transport naturally induced experiments in the preparation of brick-tea, by which a cubic foot of loose leaves could be compressed into a very much smaller bulk. It is in this direction that Kumaon planters must look for a means of overcoming or mitigating the heavy expense of carriage for their surplus produce; at the same time, so long as local sales pay, they would be ill-advised to export any of their tea at all.

On the Neilgherry hills the tea plant attains a great size, even at the height of 6,000 feet, and yields a fair crop of leaves; but the expense of cultivation is unfortunately heavy. Although indigenous labour is not scarce, there is a lack of skilled manipulators, which it has been found difficult to fill up, owing to the great

distance from Calcutta. But probably the strongest reason why tea cultivation has not thriven so conspicuously as elsewhere in India, lies in the fact that coffee farming has to a great extent superseded it. The latter form of industry seems to have taken firm root among both natives and Europeans, and the good mutual understanding which exists has given rise to the remark that the planters who are best known for strict unswerving justice, consideration for native habits, peculiarities, and customs, and who are acquainted with their language, are always best supplied with labour, and have their work most satisfactorily performed. The infusion derived from the coffee leaf being already esteemed among these hills as a refreshing beverage, it might be well worth the attention of planters to cultivate the shrub for its leaves alone (especially in the hot, low-lying villages, where an abundance of leaves is produced rather than fruit), and to bestow extra care on the preparation of coffee-tea for the home market.

It may now be desirable to add something regarding soil, having reference to what is required for successful tea cultivation; and to show where marked differences exist between Chinese and Indian methods of manipulation. When forest land is trenched for the first time, a super-stratum of dark mould is exhibited of from five to eight inches in depth. This is the rich vegetable deposit of centuries, and its extent determines, in conjunction with the chemical constituents of the adjoining soil, its value for agricultural purposes. There is no manure so efficacious in encouraging rapid and prolific growth of the tea plant as this old decayed compost, and nowhere in India does it exist in such abundance as among the lower Himalayas. In the dense virgin forests there, which have flourished for ages, the masses of leaves and twigs have annually rotted as they fell, thus enriching the soil on which they have accumulated. In some places the oak and rhododendron jungles exhibit a thickness of even twelve inches, and experience has proved that the decayed leaves of those trees produce a richer natural manure than any other. Beneath this deposit is found the true surface soil, averaging nine inches in thickness, which is usually light and fertile. Under good cultivation this and the super-stratum, when well mingled, produce a rich mould eminently suited for the growth of tea. Still lower is the sub-soil, on the quality of which much depends. The tea plant possesses a long tap-root, which usually penetrates the two upper strata in search of moisture. If this is wanting, the site lacks a main qualification for a tea garden. It must be allowed, of course, that moisture existing in the upper strata, the result of plentiful showers and

heavy dews, relieves the roots from the necessity of much downward growth, rendering them more accessible for the purposes of pruning when the proper season arrives. Nevertheless, penetration to the moist subsoil is always desirable, because, in times of long continued drought it is only there that the sap, on which the luxuriance of the plant depends, is to be found. If Eastern Bengal possesses the best tea climate, undoubtedly the Himalayan gardens own the perfection of soil, and it is owing chiefly to this fact, united to copious supplies of willing native labourers, that the hill plantations have struggled on so long and with such fair success, notwithstanding other serious disadvantages.

Probably one of the most curious and interesting features connected with black tea manufacture in China, is the fact that the newly-plucked leaves apparently possess neither that aromatic, bitter, and astringent taste, nor the fragrant odour characteristic of the finished article; these valuable idiosyncrasies being evidently developed, or at least rendered prominent, during the process of manipulation. Another notable point is that different qualities may be prepared from the same plucking or harvest of leaves, which, by varied treatment, can be converted at pleasure into black, semi-fermented, or green tea. It is by a lengthened exposure of the leaves to the air and sun, accompanied by fermentation and gradual roasting and firing, that the distinguishing colour and flavour are developed in black tea; quick scorching and rolling without fermentation or exposure, but with the addition of more or less colouring pigment, producing the desired appearance of green; whilst some exposure in the open air and in the withering-chamber yields the varieties known as Oolong, Pouchong, etc., and in India as Namunna teas. The reason of this becomes obvious when the chemistry of the operations is considered. According to Dr. Stenhouse, the tannin of tea-leaves is associated with a small quantity of gallic acid affording a blue-black precipitate with iron salts. Tea-leaf tannin being a glucoside, when united with a ferric salt and applied to animal membrane, exerts a similar influence to oak bark in producing leather; and, in common with other tannins, it exhibits a remarkable thirst for oxygen, especially in presence of a metallic base. Now, experience has taught the Chinese that the presence or absence of iron absorbed from the soil and imprisoned in the tissues of the tea plant is a matter of so much importance in influencing their decision as to whether the crop shall be converted into black or green tea, that a departure from the rule, at first founded on observation and latterly confirmed by chemical research, is never attended with good

results, but is usually followed by disappointment. Thus, although a portion of the same harvest, when dried and roasted quickly, produces a green tea, and when subjected to protracted exposure, fermentation, and manipulation, a black tea, superiority as to quality in either cannot be attained unless the preparation be judiciously modified or reversed in view of the presence or absence of iron in the leaves. In other words, where the soil is destitute of or deficient in ferric salts, the leaves produced are made into green tea; where iron abounds, the Chinese manufacture black tea. Accordingly, travellers mention it as a prominent feature of the Moning or black tea districts, that chalybeate springs are plentiful, and the highly ferruginous nature of even the surface soil indicates an excess of iron not usually met with in those localities devoted to green tea. Where this peculiarity is less evident, as in the plantations around Foochow, it is found that their produce is so modified in colour by the smaller amount of iron present, as to have earned for it the distinctive name of "red leaf tea." In India the same ferruginous element must be coaxed into usefulness when present, and in its absence a modified formula adopted; hence it is on account of the paucity of iron in the soil that it has been recommended always to convert the produce of Kangra, Tukvar, Kurisong, Dehra Dhoon, and some parts of Darjeeling, into green tea.

The distinguishing process through which black tea passes, but from which green tea is exempt, is fermentation, which produces marked changes in the constituents of the leaves. When the process is overdone so that a portion of the tannin is converted into free gallic acid, the tea is found to have acquired a more or less sour flavour, and in consequence its worth is materially depreciated. To the valuer or dealer possessed of fine taste and keen sense of smell, there is no flavour more objectionable than this; accordingly, samples which exhibit slight acidity, or even a tendency in that direction, are unhesitatingly priced at from fourpence to sixpence per pound less than would otherwise be the case, although they may represent most attractive teas in every other respect. In order to prevent all risk of sourness (which was an unfortunate characteristic of the tea produced in some Indian gardens until within the last few years), it has been recklessly suggested that fermentation should be wholly abandoned. But this rash proposal, if ever seriously entertained, could only be adopted at the sacrifice of that delicious fragrance and grateful aroma which distinguish China tea, and in which most Indian growths are lamentably deficient. Recently an important

novation has been introduced at the factories of one of the chief tea-producing estates in Assam, which nevertheless aims at the partial abolition of the fermenting process and hastening that of curing. It consists in the employment of an apparatus for the use of carbonic acid gas and hot air mingled. A series of iron tubes pass through a furnace, their open ends resting on a level with the table on which the freshly plucked tea-leaves are spread. The opposite ends terminate in a longitudinal iron box, which receives a constant supply of mixed hot air from a close charcoal fire by the aid of a fan driven either by steam, water, bullock, or coolie power. Passing through the heated tubes, the blast at once dries and oxydises the leaves, in conformity with the chemical axiom that oxygen is usually more energetic in its action when in the presence of carbonic acid. Theoretically, this arrangement seems to promise an improvement on the objectionable system which formerly obtained in some gardens, under which tea, after a four hours' firing, was put aside for a week or so, in order that it might absorb moisture from the air before being sifted, thereby reducing its liability to disintegration during the latter process. It was during this period of rest and absorption that much damage occurred. Frequently the heaps of tea which had been previously subjected to heat for many consecutive hours were left too long before being sifted or even disturbed. The leaves contracted so much humidity that they became mouldy or sour; and as the natural yet unfortunate result of such mistaken treatment, more tea was spoilt than from any other cause. It was a clumsy attempt, in short, to supersede definite periods of exposure to the air and legitimate fermentation by a protracted firing, followed by a week of inaction, probably in a damp outhouse, which caused a species of destructive seething or surreptitious fermentation, which in many instances ruined the tea. Why should such a risk have been run at all? Why not subject the fresh soft leaves to fermentation under careful supervision, as the Chinese do with marked success? When the leaves are fresh, they offer a favourable condition for the encouragement of those delicate chemical changes which culminate in aroma, *sève*, pungency, and colour, a condition which cannot be secured after extended firing and the acquisition by them of fungoid growths or acidity. Doubtless the new process will tend to obviate these evils, and will certainly economise time; but it does not seem calculated to supersede, or even partially replace, fermentation.

William Cochran.

(to be continued.)

DINING IN CENTRAL ASIA.

Few travellers have had opportunities of furnishing us with much information regarding the domestic life of the inhabitants of the more remote districts of Central Asia. From what we have been able to gather from M. Vambery's "Book of Travels in Central Asia," and from a recent account by Mr. T. D. Forsyth, of his visit to Yarkund, it would appear that these Asiatics are by no means wanting in hospitality, and that particularly distinguished guests are received with a degree of ceremony, known as the custom of the "dusterkhan," or tablecloth. Having received the guest at the door of his tent, the host and party seat themselves on the ground. A coloured tablecloth is then spread before them, and fruits, such as melons, pears, grapes, apricots, and nectarines, which are cultivated in those regions, with sugared almonds and biscuits, are placed upon it. The custom is for the guest to break a piece of bread or biscuit, and then to invite his host and companions to join in the feast. He also offers them cups of green tea, of which, unmixed with milk or sugar, a true Yarkundee or Andijani will drink a considerable number. Conversation on the part of the host at the first meal is not considered polite. After a little while, the fruit is removed, and any crumbs of bread which may have fallen are carefully placed on the tablecloth, which is taken away; beards are stroked, everyone says, *Allah akbar*, and then the host suddenly gets up and runs out of the tent, the reason for this act being, as it is suggested, that he is supposed to be anxious to get away without putting his guest to the trouble of rising to bid good-bye.

However considerate this act of the host may be towards his guests, it is not likely to commend itself to Europeans, and least of all to Englishmen, who, above all others, like to combine their feasts and entertainments with sociability and conversation. An Englishman must not, however, judge of the feelings of stolid and dignified Asiatics by his own. If the manners above described are quite opposite to what we are accustomed to in England, so also is the order of their courses at dinner. At this more important meal, the "dusterkhan" course would appear to take its place merely as a *hors-d'œuvre*, after which dishes of meat are served up, and last of all soup. This is the correct Andijani

custom—first, fruit and sweets, then meat, and last of all, soup. The *entrée* to which Mr. Forsyth was treated, on his visit to Yarkund, consisted of minced meat, very delicately seasoned, done up in paste and cooked in steam. Then followed the hash, or pilau, of well boiled mutton and rice, with shredded carrots; the whole winding up with a basin of thick mutton broth, with rice or barley, and flavoured with a slight acid. During the meal an attendant, with teapot in hand, supplies perpetual cups of weak tea to the guests.

Mr. Forsyth, who appears to have made himself acquainted with the inner domestic life of the people amongst whom he found himself, states that the *cuisine* of a Yarkund host would commend itself to the most fastidious Englishman's palate. Everything in the kitchen is kept most scrupulously clean. The cooks wear neat aprons, and are particular in using clean vessels; they cook with good butter and by steam, and can serve up a variety of *entrées* and *entremets* that would render a dinner *à la Yarkundee*, popular even in London.

F. C. Danvers.

Cannibalism in South-Eastern Africa.—In reference to the article on "Cannibalism" in the June number, a correspondent calls our attention to a paper which appeared in the *Journal of the Ethnographical Society* for 1869, testifying to the recent existence of communities of cave-dwelling cannibals in the territory of the Basutos, close to the frontiers of the Cape colony. One cavern, near to the mission station of Cana, is described by the writer of the paper, a Mr. Layland, as follows:—"The cavern is formed by an overhanging cliff, and its entrance, a long, rugged, natural arch extends along the whole face of the cavern, which in length is about 130 yards, and in breadth about 100 yards. The roof of the place, which is lofty, was blackened with the smoke and soot of the fires of the savages who formerly occupied it, and its floor was strewn with human bones piled together, and scattered about at random in the cavern; and from thence down the sloping face of the rock as far as the eye could reach, the clefts and small level spots were white with the bones and skulls of human beings. Skulls especially were very numerous, and consisted chiefly of those of children and young persons. These remains told too true a tale of the purpose for which they had been used, for they were hacked and cut to pieces with what appeared to have been blunt axes or sharpened stones. The marrow-bones were split into small pieces, the rounded points alone being left unbroken. Only a very few of the bones were charred, showing that the prevailing taste had been for boiled rather than roast meat. These people . . . inhabited a fine agricultural country, which, moreover, abounded with game, yet they were not contented with hunting and feeding upon their enemies, but preyed much upon each other, many of their wives and children falling victims to the practice in times of scarcity." They are reported to have abandoned the practice for a good many years, but Mr. Layland observed remains in which the marrow and fatty substances testified to a recent origin. He adds that thirty years ago the whole country from the Moluta to the Caledon River was inhabited by cannibals.

POPULAR FOOD ANALYSIS.

No. 13.—BEER.

The consumption of beverages possessing more or less intoxicating properties is a failing common to all mankind. It would be difficult to mention any country on the face of the globe where the natives do not drink some liquor produced by fermentation. Many of these modes of quenching the thirst would appear to an Englishman, accustomed to his "stout and bitter," to be execrably nasty. But they still meet the great human craving for alcohol; and it is not impossible that if a Tartar were treated to a bottle of "Bass," he would pity the barbarians who drank such an unpalatable liquor, altogether devoid of the delicious flavour of decomposed milk which he so much appreciates. It will be interesting, before entering upon our subject, to take a glance at the nature of a few compounds used in other countries as intoxicants for the million.

The Tartars and Mongols use fermented milk under the name of *koumis*. This differs considerably from the English idea of clear and sparkling beer, inasmuch as when made according to the established method, *koumis* is thick, like soup, and when taken, it has always to be well shaken. Without attempting to solve the riddle as to when the ingenious toper lived who first conceived the idea of extracting his "little drop of comfort" from an innocent beverage like milk, it will be worth asking how the transformation is accomplished. Mares being more handy in Tartary than cows, and their milk containing more sugar as a source of alcohol, it is not to be wondered at that the natives should utilise the former in preference to the latter. The process of making *koumis* is as follows:—Take six gallons of new milk, diluted with one gallon of water, and mix it with a little old *koumis*, covering up the mixture, and keeping it for twenty-four hours in a warm temperature. Afterwards it must undergo a thorough agitation, so as to incorporate the curds and whey, and is then to be left at rest for another day and night. Finally, it is placed in a tub, and shaken till it becomes of the consistence of pea soup. The result is, considering the fat and casein that it contains, a nourishing and slightly sour drink, possessing considerable powers of intoxication, although travellers state that it does not leave behind the dreadful headaches which our strong malt liquors are apt to do. It has been said that in the extreme north of Scotland a sort of *koumis* is made from buttermilk; but although we have spent many happy days in that region, we

have never met with any indigenous drink weaker than "toddy," except a most undrinkable stuff called treacle ale, made for the farm labourers to imbibe when in the fields.

There is another curious beverage called *bouza*. This is a preparation of fermented millet seed, which is consumed by the Crim Tartars; and the same name is also given to a drink prepared by the Abyssinians and other African tribes, from the seeds of a plant called teff (*Poa Abyssinica*), which produces a thick sour liquor, resembling the milk-beer. Millet-seed is also used in certain parts of India for producing a cheap intoxicant. The seed, having been moistened, is allowed to ferment for a few days, and is then kept for use. When the beverage (which is called *Murwa*) is to be enjoyed, a sufficient quantity of the fermented seed is taken and hot water placed upon it, just as we make tea. The infusion is then consumed warm, by sucking through a slender reed after the manner of a sherry cobbler. It has indeed been mentioned by travellers that this beverage tastes somewhat similarly to sour sherry and water, although, like all such drinks, it needs an acquired taste to appreciate its virtues. But of all the repulsive beverages in use, taken in connection with the peculiar arrangements deemed necessary for its orthodox preparation, probably no one exceeds in loathsomeness that of *Ava* in the Fiji Islands. This name is applied to the root of the *Macropiper methysticum*, which is chewed by the healthy women, the young persons whose teeth are sound, and those who are free from colds, the chewings and saliva being thrown into one common receptacle, mingled with cold water, and afterwards strained, when the liquor is considered ready for enjoyment. The courageous reader who may at any time be tempted to sip a little of this substitute for nectar need not feel astonished should the taste and flavour somewhat disappoint his expectations, as Captain Wilkes, in his "United States Exploring Expedition," assures us that the beverage reminded him of a mixture of rhubarb and magnesia. Nor will he incline to pin his belief to the rhapsody of the poet who says:—

> Women first invented wine,
> Ere man found out to drink it;
> If otherwise, she weren't divine,
> For this we're bound to think it;

at least, in so far as the Fiji Island ladies who masticate *Ava* for their lords are concerned.

Leaving the Russian *Quass* from rye, the German *Weiss-bier* from wheat and barley, and many others which have nothing so peculiar

as to call for particular description, it will be interesting to briefly trace the history of beer. The Egyptian nation is the first which seems to have used such a beverage, and the origin of its employment is attributed by some writers to Osiris; but as he has been gratuitously credited with many of the wonderful discoveries in early days, the commencement of the consumption of beer may probably with much more likelihood be referred to other causes. Among these, the fact of the scarcity of the grape-vine, which could only be grown in districts unaffected by the inundations of the Nile, stands prominent. This led to an interdict upon the drinking of wine by any but the very highest ten thousand, and so the bulk of the population naturally sought for an easily prepared and cheap intoxicant wherewith to imitate their superiors. The beer used is said by most authorities to have been called *xythum* and *curmi*, and to have been composed of an infusion of barley, with the bitter principles of the lupin added to preserve it, though on this point there is much obscurity. It is certain that the liquor in use by the modern Arabs and Copts has scarcely any bitter principle in it, and becomes decomposed in a few days, so Strabo is more likely to be near the truth when he states that nearly every family had its own favourite receipt. Xenophon mentions beer in his "Retreat of the Ten Thousand," written 400 B.C., and even in those days were found advocates of teetotalism. A Greek doctor, Dioscorides, is prominent in his discouragement of the use of the *zythum*, which he declares to be the cause of leprosy. This extraordinary statement was taken up, and, notwithstanding its evident absurdity, was reproduced and commented upon by subsequent medical authors. It also forms a question whether the ancient malt liquors were prepared from simple barley only, or whether the good housewives were acquainted with the process of malting. It is, however, made certain by Tacitus, that the system of turning the barley into malt before infusing it was known to the Romans, who drank a beer so prepared under the name of *cerevisia*. From Rome the use of beer spread to Gaul, and took deep root in that country until expelled by the employment of wine, which could only have become popular years afterwards, for we find that the sole use made of the vine by the Bretons was to ornament their gardens. Passing over from France, the taste for beer arrived in England, and soon took hold of the popular fancy.

J. Muter, Ph.D.

[TO BE CONTINUED.]

HINTS FROM FOREIGN LANDS.

I have at frequent intervals resided on the Continent, and principally on the beautiful Riviera between Nice and Genoa. I had but little opportunity there or elsewhere of seeing the interior domestic arrangements of French and Italian families, but from the cursory observations that I was enabled to make with foreign servants, I saw much which English households might imitate with profit, and particularly as regards the famous *pot-au-feu*. The apparatus required for it only costs about ninepence or tenpence, according to size; and the wooden spoon, which is such a necessary appendage, can be got for about twopence. Now what poor cottager cannot establish so simple an addition to the cuisine? Well, I must confess, there is a reason, and a very substantial one; it is, that these earthen pots are not easily to be met with in England, though there is no reason why the commonest pottery should not produce them, if only they were asked for. My French cook insisted on having one in preference to a metal saucepan; and I believe that she was right. There is a richness in soup made out of these pots with which I never met when produced from iron ones. Now let me suggest to my readers, when they buy their next shoulder of mutton or their next piece of ribs of beef, that they request their butcher to bone and roll it for them. The shoulder of mutton treated thus will taste much better; if it is stuffed like a loin, it will, the next day, present a nice compact appearance, and look more inviting than our joints usually do on the second day. Into this *pot-au-feu* (or, if such cannot be obtained, a "digester," as a great improvement on the ordinary saucepan) the bones should be put, with any odds and ends of vegetables, and should simmer for six or seven hours.

With regard to Julienne soup, I would observe that in the winter season, when fresh vegetables are scarce, the French can buy for about ninepence sufficient prepared and dried vegetable to make four or five large tureens full of excellent quality. It only needs to be soaked for two hours in the water, and then, if boiled for about an hour, it will be ready to serve. This Julienne preparation may be obtained at Italian warehouses in London, but I have not thought it quite equal to what I have seen in Paris and the south of France, perhaps because it does not meet with a very

ready sale. There is no reason why we should not manufacture it equally well with the French, for we have all the requisite vegetables; our turnips and carrots are, indeed, superior, and they are a main ingredient. But whether fresh or dried, all that is needed is to obtain a variety, such as onions, turnips, carrots, celery, cabbages, and spinach. Let them be cut into strips, about the length of orange-peel in marmalade, only not quite so thin; put them into a frying-pan with a little butter or dripping, and fry them lightly; add them to the stock made from the bones, and a delicious soup is produced.

And now another hint. I have often seen in an English kitchen the cook detained over the operation of stirring semolina, sago, etc., lest it should burn, until sufficiently cooked for use. My French cook always brought the milk to boiling point, and then dropped the grain into it; by this method not only did a shorter time suffice for softening and swelling it, but when done it was much better.

Then, again, why should omelets, so inexpensive and so quickly prepared, especially in our farm-houses, where milk and eggs are abundant, appear so rarely on our tables? How delicious is the *omelette soufflée!* How easily made the simple sweet omelet, with a little preserved fruit laid on and quickly rolled over!

On the shores of the Riviera we were continually served with a beautiful and elegant cream, the whole cost of which could seldom exceed 10*d.*, for all that it contained was one quart of milk, six eggs, flavouring, and sugar to taste. Besides these ingredients, there are required a shallow stew-pan and skimming spoon (or in default of such an article, a fish slice will serve if thoroughly clean), two bowls and a fork. Set a quart of milk, sweetened with white sugar, on the fire in the stew-pan to boil; in the meantime, break the whites of six eggs into one bowl and the yolks into the other. Beat up the whites to a high froth, and as soon as the milk boils, take with the skimming spoon large flakes of the egg whip and lay them lightly on the boiling milk. After letting them boil for a few minutes, repeat the operation with the remainder of the froth until all has been set, and pile it high in the centre of a glass dish. Make a custard with the yolks of the eggs and the milk, flavouring it with lemon or vanilla, and pour it round the snowy pyramid. It will maintain its place well for many hours, and may be still further embellished according to taste by tipping some of the top flakes with the least possible quantity of cochineal essence.

Another dish that I have introduced at my English table from the Italian cuisine, is a sweet macaroni pudding, which should be made

in a plain tin mould. Into this mould put about six or seven lumps of sugar (or about an ounce of raw sugar), slightly moisten them with water, and set it over the fire, using a hot plate, so as not to blacken the bottom of the mould. Let it boil until it begins to burn, and then, by tilting the mould from one side to another, let the burnt sugar cover the whole of the inside, so as to form what the French term a *caramel* crust, which must stand to cool. In the meantime boil sufficient macaroni in milk to fill the mould, and sweeten to taste, flavouring with lemon peel. When cold add three eggs, put everything into the *caramel* mould, set it in a saucepan of boiling water and let it boil for an hour. Turn it out and pour coffee round it, with milk and sugar added, precisely as made for breakfast. The coffee sauce harmonizes well with the macaroni and is a novel accompaniment.

In England we eat caper sauce with boiled mutton, but in the land of capers this sauce appears to be unknown, though capers are introduced into *rechauffés*, or boiled with the meat,—and when butter is dear, as it is at present, this is a more economical arrangement.

Before closing this article, let me recommend two convenient additions to the store closet. Pastilles for soup; which consist of balls composed of vegetable matter (sold in bottles, and costing about a halfpenny a ball), are invaluable for colouring and flavouring soups, only requiring to be added with the meat or bones; as are also dried mushrooms, an Italian preparation, but unfortunately three times the price in London that one has to give in Italy; nevertheless, in flavouring dishes a little goes a long way, and they can of course be used when mushrooms are out of season. Both the pastilles and mushrooms are to be obtained at Piccirillo's, Wigmore-street, London.

Yet one word more to the cook: do not throw away as utterly worthless the remainders of lemons which have been peeled and squeezed. Lemons have very cleansing properties, and such fragments if put into the scullery soap-dish will cleanse both the hands of the cook, and her saucepans.

Economia.

A correspondent in the *Gardener's Chronicle* calls attention to the value and flavour of the unblanched flowering shoots of seakale, as an esculent particularly useful in the present backward season.

Mr. Fischer, of Erfurt, recommends a covering for cigars where the lips come in contact with the leaf, in order to avoid unhealthy salivation. He thinks that a solution of shel-lac in spirits of wine will answer the purpose.

THE NORWEGIAN FISHERIES.

Norway is a great country for fish, and some of its rivers are the most famous salmon rivers in the world. Moreover, it possesses a very long and much indented coast line, which furnishes a large part of the herrings, lobsters, and salt cod consumed in England. The most valuable Norwegian fisheries are in the extreme north, near the Lofoden Islands, and within the Arctic circle. Here the sun sets in November, and is not seen again till the corresponding period of spring. The whole of the interval is one long night, yet thanks to the influence of the Gulf stream, the cold is not excessive, and the harbours are seldom or never blocked with ice. To make up for it the whole of the summer is one long day, and as the sun never sets, the heat is great and the grass and crops grow double tides. It has been ascertained that at Alten in this district, in latitude 65°, barley grows 2½ inches, and peas 3 inches in the 24 hours. It is in the midst of this strange country that the most important fisheries are carried on. In the first place, the great salmon rivers are here, and many Englishmen come hither every summer to amuse themselves by salmon fishing. Formerly the rivers were free, but of late years the demand for fishing has been so great that all the best streams are as regularly leased out as the Tweed or the Thames. Quantities of salmon are caught in nets, etc., besides those caught with the rod by English fishermen. Cured salmon is a very common article of food throughout Norway; it is sometimes salted, but is often merely dried without being cooked at all. However, the great fisheries, and those of most interest to Englishmen, are the deep sea fisheries for cod and herrings, which constitute the most important branch of industry practised in Norway. The annual produce of these amounts to upwards of a million of money, and they give employment to between 20,000 and 30,000 men; of herrings alone about 1,000,000 barrels are annually procured, of which a considerable portion finds its way to this country. Our own herring fishery is extensive, but we suspect that a good many of the so-called Yarmouth bloaters come from Norway.

Yet the herring fishery is less important than that of cod, which takes place in the neighbourhood of the Lofoden Islands in the extreme north of the peninsula. Here the cod are said to lie so

thick on the banks at the bottom of the sea, that a sounding line often strikes a fish before it reaches the ground. The fishery begins in February, at which period, as we have already mentioned, the sun is never seen. There is, however, twilight enough to enable the fishermen to ply their trade. It is entirely carried on from boats, the largest of which are about three tons burden. The cod are caught in two ways: with nets in the English fashion, and with lines. These lines, or rather cables, are 1,000 fathoms long, and are supported in each case by a buoy, and secured by anchors to prevent their drifting. Each line is garnished with 1,200 hooks, at distances of 5 feet from each other, each hook being on a separate hook line of about a fathom in length. The lines are set at night and taken up in the morning. The fish are not salted, but are merely gutted and hung up in pairs upon poles, to be dried in the wind, and when thus cured they are exported in large quantities under the market name of round or stock fish; a name derived from the sticks or poles (called in Norwegian *stocken*) upon which they are hung up to be dried. The term is at least as old as Shakespeare's day, when it would seem that stock fish constituted an important article of food in England. Thus Stephano says ("Tempest," Act iii. Scene 2):—"By this hand I'll turn my mercy out of doors and make a *stock fish* of thee." And Falstaff ("Henry IV.," Act ii. Scene 4) calls Prince Hal:—"You starveling, you elf's kin, you dried neat's tongue, you *stock fish*."

The Norwegian fishermen, like the English North Sea fishing fleet, constitute a thoroughly organised body, under appropriate government, and are divided into stations, each station comprising a number of different companies, and each company having its own proper fishing-ground, upon which no one is allowed to trespass. Over each station is a commander (corresponding to the admiral of the English North Sea fishing fleet), who is elected by the fishermen, and who regulates all the police and other arrangements of the fishery, such as the time at which the nets are to be drawn in, the measures to be taken to prevent poaching upon the grounds of the different companies, etc. Every twenty or thirty companies have a sailing vessel, called a *jagt*, attached to them, which acts as a tender, brings them provisions, and takes away the fish which they have caught. These *jagts* carry on the fish trade of the North. They are clumsy, awkward vessels, and with their unsavoury cargo, may be smelt a mile off, down wind; yet there is no doubt that they have given the name to the graceful pleasure *yacht*, which is so peculiarly characteristic of the English race. In fact, the pronunciation of the two words is almost the

same. Some time ago there were employed on an average in this fishery 2,916 boats, fishing at 83 different stations, and accompanied by 124 *jagts*. The total number of men employed was 15,324, and the yearly produce consisted of 16,456,000 fish, equivalent, when dried, to about 8,800 tons in weight. Besides this, there were secured 21,500 barrels of cod oil, and 6,000 barrels of cod roe.

The great cod fishery ends in April. After that time the fishermen, who live at a distance, return to their homes. The rest fish on; but a change, attributable to the warmer weather, etc., takes place in the mode of curing the fish. Instead of being hung upon poles, they are split open and salted, and then dried upon the rocks. Although the summer fishery is much less extensive and productive than the winter one, yet the quantity of fish taken is so great, that travellers in this northern region find whole acres of rock covered with fish laid out to dry, or collected in piles like hayricks.

Another fishery of much interest to Englishmen is that of lobsters. The headquarters of this fishery are at Christiansand, a town in the extreme south of Norway. Attention has lately been drawn to this place by the circumstance that it was in its neighbourhood that two Frenchmen, who left Paris during the siege in a balloon, and were carried across the German Ocean, finally succeeded in descending to the ground. On this coast the fishery of lobsters, most of which are exported to London alive, is so extensive, that during the season there are two lines of packets constantly employed in the trade. Let those who love lobsters be grateful. There is also a considerable deep-sea fishery, especially of mackerel, in the neighbourhood of Christiansand. During a recent visit to Norway, we were obliged to spend some days at this place, waiting for a steamer. We could not eat lobsters all day long, and by way of killing time we tried fishing in the harbour. We fished in the ordinary manner, with lines from a boat, and succeeded in catching a large number of very minute whiting. We were, however, too near the shore, and for real deep-sea fishing, we should have gone out several miles from land.

M. Browne.

COOKERY PAPERS.

No. IV.

We may conclude that in nine cases out of ten the mistress is, or ought to be, virtually the cook in middle-class houses. But there are besides, the "good plain" cook, and that combination of cook, housemaid, butler, and nurse, called generally the maid-of-all-work, or rather the maid of no work; and both are usually ignorant of that which is absolutely essential to the performance of their duties. I have been led into writing at so much length on this part of the subject, for I believe that here we have the root of the evil; and that if anything is to be accomplished in improving our middle-class cookery, it is almost solely to the ladies that we must look for assistance; for in this, as in most things, we are entirely dependent upon them. It is therefore mainly by educating the young ladies of these days in the art of cookery that we can hope to benefit the *cuisine* of posterity. This neglect in the female education of our day has rendered our middle-class cookery decidedly inferior to that of other nations, and a byeword abroad. Our grandmothers knew how to order a dinner, and if necessary to cook it; but our wives and our daughters, as a rule, have not an idea on the subject. I can call to mind an old, a very old, receipt book, in which many pages are blank, or scarcely legible, because the ink has faded under the corroding influence of time; it has been in the family for years, and originated, I believe, with my grandmother's mother, the wife of a clergyman. Most families possess such a manuscript book of culinary treasures, but most I fear, like mine, have been neglected or rarely consulted. Modern times have not added modern dishes to the index; little has been added—very little indeed—since the originator was gathered to her fathers. Undoubtedly our middle-class cookery has degenerated, and we do not pay so much attention to it as did our predecessors, and good inexpensive middle-class cookery, practised as an art, has almost died out. Would that by any means I could resuscitate it! By varying the style, nature, or articles of diet, and by improving the flavour of the food consumed, we conduce in no small degree, I think, to the happiness of the family circle. Our grandmothers could manage the cooking as well as the cook, but I fear that most wives can rarely now-a-days manage either the one or the other—and this is simply the natural result of their education. Every mother should consider that it is as much her duty to see that

her daughter is instructed in the elementary principles of cookery, as in any other branch of her education; whether she is destined to rule the roast in a cottage, or to adorn the drawing-room of a mansion. The art of making pastry is an accomplishment, for instance, that would not soil the delicate hands of the most elegant gentlewoman, and every man of sense will echo the sentiment. What opportunity have our middle-class servants of obtaining any knowledge of the art of cookery, untaught as they are? The cook, perhaps, was at first a scullery-maid, when she "cleaned up" after the cook; but when she was principally employed in scrubbing floors, pans, dishes, and herself, can it be expected that she would acquire even the most superficial knowledge of the art? Cleaning kitchen utensils is a necessary part of the middle-class cook's duties, but it is not cooking. She could have gained no insight into the practice in her father's house, for there, most probably, there was little to cook.

There are some admirable institutions for training domestic servants, but they are few in number, and perfectly inadequate to cope with the existing evil; for, as in these places only a very small amount of practice is possible, so the knowledge of cookery gained is extremely meagre, and limited in its extent. Schools of cookery have been established, but they do not seem to have had a successful result. Philanthropic ladies might surely be found to superintend these institutions. The girls, however employed, should only be considered as learners; and arrangements should be made for teaching them by those who are capable of teaching. I would suggest that such an establishment, founded on sound business principles, should have a luncheon-bar, restaurant, with ladies' dining-room, and cook-shop for the poorer classes, attached.* A matron should be appointed, as head and sole director, who possesses a thorough knowledge of cookery and business tastes and habits. Under her should be two or more good female cooks, and young women should be employed for one or two years continuously as apprentices. But the establishment must be more than a school to be pecuniarily successful, and must be placed on a sound business basis, which from my knowledge of this kind of business I can say is accomplished most advantageously for all parties by the service of a large number of apprentices. These young women might receive wages for their services, and a certificate from the matron would ensure them situations as cooks at high wages on the completion of their time

* An establishment of this kind is on the eve of formation.—Ed.

of service. Such cooks would be eagerly sought for, and their employers would know on engaging them that they really possessed a knowledge of cookery, which is not now essentially the case when one engages a cook. Some standard ought surely to be introduced as well in the case of females as males. No one would employ a man cook, who had no certificate of his capacity or indentures of apprenticeship. In most cases the time of service necessary to attain the high standard, which is considered requisite by the professors of the higher branches of the art, ranges from five to seven years.

It is useless to attempt to train a cook by a series of lessons, and I would advocate a short time of continuous service for every domestic servant in an establishment of this kind, or in some place of business of a like nature; because in the first place that they take they are often employed as general servants, where a knowledge of cookery either in the mistress or maid is necessary. But when the servant has no intention of aspiring to the situation of cook, only a few months apprenticeship in such a place would, perhaps, be all that was necessary. If no one will teach the mistress, who will teach the maid? I can only add, that fathers are delighted to have the opportunity of apprenticing their sons to professional cooks for seven years without any wages, and in some cases the most celebrated culinary artists demand high premiums, and obtain them easily. I have heard of 200*l.* being paid by a father, as a premium, on apprenticing his son for seven years to a culinary artist of note. Why should we suppose that young girls ought to earn wages before they have learned any craft? and I think if only opportunities were opened up by which female servants could obtain some knowledge of cookery, they would gladly forego a year or two for the sake of the benefits which would accrue in the future. Some sort of apprenticeship is undoubtedly necessary for the education of a cook, male or female; our best female cooks have invariably lived for some years as helpers in the kitchens of wealthy families. The question then arises as to whether our servants shall serve their apprenticeship under their mistresses, or whether we shall teach them by means such as I have suggested. I have said that it is rarely that their mistresses can teach them, and that establishments for training domestic servants are unfortunately few in number. Practical knowledge is essential; how is it to be acquired? By means of such establishments as I have mentioned cooks can be manufactured, and respectable dividends, too, paid to the promoters of the undertakings.

A Cook.

MARKETS OF THE MONTH.

Comparing the present with the past year, it needs but a superficial glance at the state of the provision market to discover that our lives are set in hard times. In almost every branch of the provision trade a rise in price has been experienced since 1870, and even where such an event has not actually occurred, the state of the markets has displayed an unmistakeable upward tendency, and in many instances this persistent firmness will, I think, shortly result in a palpable advance of price. We must therefore mark 1871 as a dear year. The late Franco-Prussian war has, doubtless, largely contributed to this result; but the dry summer of 1869 was productive of effects, the influence of which we are now experiencing in the high price of meat. Bread is dearer than it was in 1870. Should the prospects of the harvest of 1871, however, be favourable, the price of bread, which is not so dear now as it was at the commencement of the year, will be lower still, and we may fairly anticipate at least an average crop of corn in most parts of the country. The state of the meat market is abnormal, and I see no reason to hope for a change for the better, at least for some time to come. The summer of 1869 was so disastrous as in many cases to necessitate that the farmers in certain districts should considerably reduce the numbers of their stock, and almost everywhere the amount of fodder available for winter food was very limited. This, of course, brought about a state of things which would tell most severely upon us in future years; for cattle being at the time forced upon the market prevented the result from being immediately apparent. The limited amount of stock in the country at the present time available to the butchers is the effect of this cause, and consequently a high price is the natural result, as the supply is limited. The price of meat in this country has steadily risen during the past few years, and the state of this branch of the provision trade is such that it must be regarded with alarm. Even during the cattle plague, and afterwards, the quotations of our meat markets did not range as high as they do now. I am speaking of meat of prime quality, for it must not be forgotten that though "eggs is eggs," beef is not always beef, nor is mutton always mutton. There is beef and beef, and mutton and mutton; but I must not pursue this subject

further. Pork is now cheaper than it has been—it is cheaper than either beef or mutton; and beef is cheaper than mutton, which last is the dearest meat at the present time. The price of meat, however, does not vary only according to its qualities and the value of each different joint; for the market price of one neighbourhood is not essentially that of another. Meat is frequently cheaper in one town than in another, but it is everywhere much dearer than it was in 1870. The present price is as high as it has ever been. The space at my command will not allow me to enter so minutely into the state of other branches of the provision trade; however, I hope to return to the subject in a future number. I will just mention that potatoes and apples have formed the exception to the general rule, and have been cheaper than usual during the past season. The quotations of the Borough and Spitalfields markets on the 8th July were—Old Flukes, 50*s.* to 80*s.* per ton; Regents, 50*s.* to 60*s.*; Rocks, 40*s.* to 55*s.*; new Kidney potatoes from 9*s.* to 12*s.* per cwt.; Jerseys, 8*s.* to 10*s.*; French, 6*s.* to 7*s.* There have been large supplies both of potatoes and apples on hand throughout the country all through the season. The average price of apples has been from 1*s.* 6*d.* to 3*s.* per bushel. Green peas fetch from 9*d.* to 1*s.* 9*d.* per peck, not shelled, according to quality. The sales of West Indian pines by public auction have been carried on as usual; the supply has been about on an average with past years, and prices have ranged from 1*s.* to 3*s.* or 4*s.* each. Purchasers will find that the cheapest bargains were obtained in the early part of July. The prices in the poultry market at this season are becoming lower, but are rather higher than at the corresponding period of past years. Good sized chickens may be obtained from 2*s.* to 2*s.* 9*d.* each, and good sized ducks for the same money in Leadenhall Market. On account of the cold spring weather, chickens were rather backward this year.

P. L. H.

Preserved Meats.—A contemporary states that—"The Victoria Meat Preserving Company (Limited), of Melbourne, has succeeded in overcoming the difficulty which has hitherto been experienced in importing uncooked meat from the colonies to this country in such a state as to render it both wholesome and palatable food. This process is very simple. The meat is first slightly corned, and then packed in a tin case, after which melted fat is poured over it, and the interstices being filled up, the lid is soldered down, thus effectually excluding air and preventing decomposition."

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

PICKLED CHERRIES.

Take 3 lbs. morella cherries, 1½ drms. mace, 1½ drms. white pepper, 1½ drms. cloves, 1½ drms. cubebs, 1 lb. loaf sugar. All the spices are to be bruised. Boil the bruised spices in 4 pints of white vinegar, and pour it warm over the cherries. Cut off half their stalks, and prick each cherry in three or four places. The cherries must be pickled when ripe, and will be ready for use about Christmas.

MAQUEREAUX GRILLES A LA MAITRE D'HOTEL.

After having gutted, trimmed, cleaned, and cut them lengthwise down the back, put the mackerel on a dish, and marinade them for nearly half an hour with oil, fine salt, and some parsley. Put them immediately on the gridiron. When they are well cooked close them, and introduce into the back parsley stuffing, with lemon juice. Serve them hot.

MACKEREL PUDDINGS.

Take one or two mackerel, as the case may require for the family, thoroughly clean the fish, remove head, fins, and tail, then cut the fish up into blocks of about two inches; take about one quarter of the weight of the fish in pickled pork, rather fat, cut it into dice, season with pepper, salt, and parsley or fennel; if the latter, a very small portion. Put the whole into a good suet crust pudding, and boil for one hour or more, according to size. On the Sussex coast these puddings are generally cooked without a basin.

POULET AU RIZ (FOWL STEWED WITH RICE).

This favourite French dish is another result of cooking in a stewpan, which is neither boiling nor frying, but something between the two. Truss the fowl, or, if preferred, stuff it with a forcemeat, made according to fancy. Envelope it with thin slices of white bacon tied round it with thread; they may be omitted, if they cause too much inconvenience. Put a good lump of butter into the stewpan, and in this partially cook the fowl, larded or not, continually turning it, and not letting it brown more than can be helped; some cooks keep the fowl light-coloured, almost white. Then add enough chicken or veal broth, or water, to stew the fowl completely, with the lid close down, but occasionally shaken. Boil half or three quarters of a pound of ready-steeped rice for a quarter of an hour. When tender, but still in unbroken grains, pour off the water and let it dry in the saucepan by the side of the stove. Add to it enough of the fowl-gravy to moisten it, and heat them up together. Spread the rice so prepared on a dish, and on it lay the fowl, after removing the bacon, if any is used; then serve. The carver takes the fowl on a plate before him, and lays the joints on the rice in the dish, which is then handed round to the company. During the stewing, sweet herbs, roots, and spices may be introduced, if it is wished to heighten the flavour at all, but the simpler the preparation the better; a slight seasoning with pepper and salt suffices.

NOTES OF THE MONTH.

The Beet-root Sugar Company (Limited).—With great pleasure we observe that a company has just been formed with the view of cultivating the beet-root as a sugar industry in this country. Beet-root production has been slowly but surely making its way in England; but this new enterprise is the first that has been undertaken to establish the industry on a large and comprehensive scale. We hope from time to time to chronicle the various developments of this new industry, and in the mean time we wish the new company a complete success.

Phosphate Sewage Company (Limited).—Amongst the new companies which have been lately established, is one which is formed to acquire and utilise the patents of Messrs. Forbes and Paice, taken out in Great Britain, France, Belgium, and other countries, for the defœcation and utilisation of sewage, which, being mixed with phosphate of alumina, becomes inodorous and deposits a valuable manure. This phosphate of alumina is found in large quantities in the island of Alto Vela, San Domingo, upon which Messrs. Peter Lawson and Son have expended 39,000*l.* in the erection of works, piers, etc., besides obtaining the exclusive concession. As the rapidly increasing population of the country peremptorily demands a solution of the sewage question, we heartily welcome the promoters' enterprise, and hope that it may succeed in removing the unpleasant effluvia arising from sewage, ere it can be manufactured into inodorous manure; for, from a sanitary point of view, as well as from an economical one, the sewage question is one which cannot well be set aside until the utilisation of this mass of useful matter, which is now wasted, becomes *un fait accompli.*

We are glad to notice that the retail tea-dealers have warmly taken up the subject of Maloo mixture, and have had an interview with the Board of Trade on the subject of directing the Customs authorities to refuse to receive the duty on any such importations. If those who are so vitally interested in the matter continue to press it thus warmly, the Government may be brought to see that as a question of policy it would be wise to check the adulteration at its very source, not to mention the moral wrong that is continually being perpetrated by allowing duty to be taken on that which is an open fraud against the laws of the country. A member of the deputation advocated the bringing into unison the Customs, the Excise, and the Sanitary departments—a measure very much to be desired.

Dr. Poleck has instituted a series of researches with the view of ascertaining the cause of the difference exhibited by flour preserved in casks, and that kept in bags, the former of which often obtains a peculiar smell. He found that the gluten of flour exhibiting that peculiar smell had been, in a great measure, converted into a soluble modification, whereby the flour had lost the capability of being converted into a good dough, the flour also having assumed a sour reaction. He ascribes the cause of this change to want of a sufficient circulation of air through the mass of the flour kept in casks, the innermost flour in which was most sour and gave off the peculiar, somewhat mouldy smell. It was also found that with this change in the flour coincides an increase of the albuminous compounds therein soluble in water.—*Chemical News.*

We fear that for the present the obstructive influences are too strong for us to hope that Covent Garden Market will be adapted to the requirements of the age and the necessities of this great city. The Farringdon Street Market will probably be improved and altered so as to become the central market for vegetables and fruit, or else a new one will be erected near the present meat market. This is very well, in default of other arrangements, but we object to the centralisation of our food markets; and we should much prefer the establishment of suburban markets, so that nine-tenths of London residents might free themselves from the thraldom and exorbitant charges of London provision dealers.

The Latest Thing in Cordials.—Amongst the numerous inventions of the present age there is one which is at present, however, only in an experimental stage, but which, if successful, may, we think, rank as a most useful discovery. This invention claims to make cordials by means of "a combination of elements universally acknowledged to be the most nutritious and invigorating—viz., milk, honey, and alcohol." The milk is condensed until it becomes a paste, at a temperature of not more than 100 degrees Fahrenheit. The honey is melted, filtered, and clarified; it is then mixed with the milk in the proportion of an ounce of honey to a pound of milk, condensed weight. The alcohol is introduced in the proportion of two gallons of spirit, fluid measure, to every twelve ounces of honey. These ingredients are "intimately blended together in bulk, being afterwards drawn off as required." The spirit used is from 20 to 25 per cent. under proof, "but for all purposes of reduction distilled water is used. The alcoholic element may be tasteless spirit, or it may be variously flavoured, as brandy, rum, gin, etc., with essential oils of spices, fruit peel, kernels, etc."

CORRESPONDENCE.

NEW ZEALAND BUTTER.

Sir,—Living in a dairying district, it occurs to me to ask if something could not be done to secure a steady market in England for New Zealand butter. At present it is fetching here but 6*d.* per pound delivered, a price quite unremunerative where wages are 6*s.* per diem, and where the dairyman has to pay 10*s.* per cwt. for salt delivered. The supply of butter is in excess of the demand at this price, as may be inferred from the following extract from the produce report of the weekly paper that circulates in the district (date, Jan. 28):—"The provision market remains glutted with butter and cheese, and the only prospect of improvement is that the dry weather will curtail the supply." The hope of an improvement in price by an unfortunate contingency does not appear to me the proper solution of our dairymen's difficulty, more especially after reading an extract from your Journal for December, with the *exposé* of some of the ingredients used in the manufacture of Brixton butter.—I am, sir,

Your obedient servant,

Ohinitahi, New Zealand, Feb. 8, 1871. Thomas H. Potts.

BOOKS RECEIVED.

The Edinburgh Medical Journal for July.

The Seventh Annual Report of the Inspector under the Alkali Act.

The Herald of Health (July), New York.

THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS.—Part XIII.

On Provisions and Markets.

In Boston a law was passed in 1855, punishing by a fine of not less than $200, the killing or causing to be killed for sale any calf less than four weeks old. An Act has been in force since 1799, providing for the superintendence of all butter and lard for exportation by a properly qualified Inspector, who brands it under the title of 1st, 2nd, or "refused," together with the name of the state, town, or city whence it comes, and the initial letter of the Christian name of the Inspector or Deputy-inspector.

The size and dimension of the casks or kegs are fixed by law. Each cask, before the butter is packed in it, is obliged to be filled with strong brine, and left in that condition for full three days, after which the cask is emptied and weighed, and the weight branded upon it. The fee for inspection is 8 cents per cask, and the penalty for refusing inspection within three hours after demand is a fine of $2. Counterfeiting a brand is punishable by a fine of $10, and masters of vessels are fined 50 cents for every uninspected and unbranded cask which they export.

The inspection of fish is regulated by an Act of 1807. All kinds of split pickled fish for barrelling, except herrings, and all codfish, tongues and sounds, halibut fins, napes and swordfish intended for exportation must be well seasoned with salt or pickle and preserved sweet from taint or rust. They must be packed either in tierces of 300 lbs., barrels of 200 lbs., or quarter barrels of 50 lbs. When the exact weight is branded, each cask is filled up with salt and clear pickle. There are four qualities of mackerel, three of salmon, three of cod, and two of every other kind of pickled fish. The penalty for intermixing fish is $15.

If a dealer in milk offer for sale any milk from cows that have been fed on the refuse grain of the distillers, he is fined $25 for the

first, and $50 for the second and every subsequent offence. If he sell any milk, the cream of which has been removed, whether the milk is for immediate consumption or to be made into butter and cheese, the fine is $100.

The inspection of meat in New Orleans is of a very stringent character, and the 533rd article of the revised city laws runs as follows: "If any person shall sell or expose for sale within the market any blown, stale or imperfect provisions, or meat of any animal that has died of disease, such provisions or meats shall be seized by the commissioners, and thrown into the nuisance boats; the offender shall be fined $50 for the first offence, and for the second he shall be deprived of vending in any of the markets or of having any stall."

No ice boxes are permitted to be kept in any of the markets. Certain houses are licensed to sell oysters, which are not permitted to be sold in any market, or direct from any oyster boat. Nor is it legal to sell stale oysters.

The barrels for the packing of beef and pork must be made of good seasoned oak or ash, free from any defect, and every barrel must contain 200 lbs. of meat. They must not measure more than 18 inches across the head, or more than 28 in length, and must be hooped with at least 12 good substantial hoops. The inspectors and repackers have to be very careful as to the quality of the beef and pork, branding such only as is well fattened. The best quality is termed "mess pork," and consists or ought to consist of the sides of good fat hogs. The second quality is "prime," of which three shoulders are packed in each barrel, the feet being cut off at the knee joint; the barrel must not contain more than 24 lbs. of head, the ears and snout of which must be cut off close. The third quality is called "cargo pork," of which each barrel must contain 30 lbs. of head and four shoulders. All the barrels containing these different qualities have to be branded "mess," "prime," and "cargo," respectively.

No beef which is repacked for exportation must exceed 12 lbs. or be less than 4 lbs. weight per piece, and has to be divided into the same qualities as the pork. "Mess" consists of the choicest pieces of large well-fattened beef, without hocks, shanks or heels, each barrel to contain 200 lbs. The "prime" beef consists of the choicest pieces of fat cattle, with not more than one half-neck, nor more than two flanks, with the hocks cut off the hind legs at the smallest place above the joint. "Cargo" beef has a proportion of good pieces and not more than one half neck besides three flanks, with the hocks cut off in the same manner as in the case of the "prime."

Each barrel must contain two pecks of coarse salt and six ounces of saltpetre, and it is then filled up with as strong a pickle as can be made. If any intermixture is made in the meat when packed, or there is any alteration in the brand, the guilty party is fined $40, and is, moreover, liable to be sued for damages by the purchaser. All the proceeds arising from penalties incurred and property forfeited are divided into two portions; one of which goes to the Asylum for Orphan Boys of the City of New Orleans, and the other to the prosecutor.

(TO BE CONTINUED.)

Amongst the peculiar materials used by the Chinese, none are more interesting than the birds' nests of which they make soup. When these nests, which belong to a species of swallow, were first seen in this country, they caused some little speculation amongst scientific men as to their composition, and great difference of opinion existed as to whether they were actually formed of a secretion of the bird or of a gelatinous sea weed masticated by it. Chemical analysis, however, has shown that they contain 90 per cent. of animal matter, so that it is now considered pretty certain that these interesting nests are composed of matter secreted by the birds at the period of nidification, which matter is analogous to that which the common swallow secretes, and with which it plasters together its mud nest. We are led to these remarks through having seen, during the past month, in some of our West-end provision shops, cards bearing the notice, "Chinese birds' nests for soup;" from which it would seem that these nests are becoming recognised articles of commerce in England. We have not inquired their retail price, for at the best of times they do not look tempting; and unless they can be sold at a much cheaper rate than isinglass, which we question, there never can be a large demand for them. Their properties nearly resemble isinglass, and they could be used only for similar purposes.

Chinchona Culture at Réunion (Bourbon).—A paper communicated to the Academy of Sciences, and recently published in the "Comptes Rendus," gives an account of the progress of chincona culture in the French colony of Réunion. The first seeds were introduced in the island in 1866, at the suggestion of Gen. Morin. They came, we believe, from Kew, but, through mismanagement, most of the young plants perished. Fresh supplies of seed were subsequently procured from Ceylon and Batavia, and a report, dated in January last, furnishes the annexed details:—At Salazie, at an elevation of 4,000 feet above the sea, two plants of *Chinchona officinalis*, saved by Dr. Vinson out of the produce of the seeds sown in 1866, were thriving splendidly. They were $4\frac{1}{2}$ years old, and 15 feet in height. Their perfect acclimatisation was attested by the fact that (in January, 1871) they were covered with flowers for the first time. It was hoped that the flowers would become fertilised this season, and that it would be possible to save seed from them. At Ilit à Guillaume, at an elevation of 3,000 feet, were two plants of *Chinchona officinalis*, 12 feet high, $4\frac{1}{2}$ years old, and 35 plants of *Chincona Calisaya*, 2 feet high, and $2\frac{1}{2}$ years old, doing well. Slips of the latter had struck well. There were a few plants doing well on other elevated sites. The Société d'Acclimatation had also distributed 111 young plants, of both species, amongst proprietors resident in the higher districts of the island. Attempts were being made, through the agency of the French Consul, to introduce the Chincona plant into the island of Madagascar.

MEDICAL ASPECTS OF TOBACCO SMOKING.

"Is smoking injurious?" This is an everyday question apt to be put by patients to their doctors. Like most broad questions of the kind, it involves far too many considerations to admit of being answered by a plain yes or no. A medical man, who has long been a moderate smoker, and watched the effect of the habit on himself and others, here offers what he believes to be the true answer to the question.

First of all, there must be an understanding about the quality of the tobacco to be smoked. Bad, *i.e.*, rank, quickly intoxicating, and prostrating tobacco (certain kinds of shag and cavendish, for instance) must always be injurious. Few can smoke them at all —none, habitually at least, with impunity. So too with regard to quantity, even good tobacco smoked to excess will to a certainty be injurious to the smoker, sooner or later, in some way or another. Of the various evil effects of excessive smoking more will be said presently.

Next, as to the smokers. There are people to whom any tobacco, however smoked, is simply poison, causing even in small doses vomiting, pallor, and alarming prostration. Such people never get seasoned to its effects, even after repeated trials; and if they are wise they will for ever let it alone. They will display still further wisdom by not presuming to make laws for others who have not the same idiosyncrasy.

No one can enjoy smoking, or smoke with impunity, when out of health. The phrase "out of health," though it may sound vague, is definite enough to frame a general rule. At the same time it is useful to know what, if any, are the particular disorders and conditions of health in which tobacco does special harm. As far as the writer's knowledge goes, these have never been specified by medical writers as clearly as is desirable.

To begin, a man with a bad appetite will, if he smoke, most assuredly eat still less—a noteworthy fact for smokers or others recovering from wasting illness or "off their feed" from whatever cause. This effect of tobacco, by the way, while an evil to the sick man who cannot eat enough, becomes a boon to the starved man who cannot get enough to eat; and ample illustration of this was

furnished among the French and German soldiers in the recent war. Again, no man should smoke who has a dirty tongue, a bad taste in his mouth, or a weak or disordered digestion. In any such case he cannot relish his tobacco. It should be a golden rule with smokers, that the pipe or cigar which is not smoked with relish had better not be smoked at all. Indigestion in every shape is aggravated by smoking, but most especially that form of it commonly known as atonic and accompanied with flatulence. Diarrhœa, as a rule, is made worse by smoking.

One of the commonest and earliest effects of excessive or untimely smoking is to make the hand shake. This gives the clue to another class of persons who ought not to smoke—persons, namely, who have weak, unsteady nerves, and suffer from giddiness, confusion of sight, tremulous hands, tendency to stammer, or any such symptoms. And if tobacco does harm in mere functional weakness, still less allowable is it in actual organic disease of the nervous system; as for instance where there exists any degree of paralysis or other sign of degenerative change in the brain or spinal cord. The improper use of tobacco does beyond question somehow interfere with due nutrition of nerve substance. An illustration of this, familiar to oculists and medical men, is the so-called tobacco-amaurosis, a failure of vision occurring in excessive smokers from mal-nutrition of the retina. Another class of persons who ought not to smoke are those who have weak or unsteady circulations and complain of such troubles as palpitation, cardiac pain, intermittent pulse, habitually cold hands and feet, or chronic languor.

Lastly, there is reason for believing that the habitual use of tobacco is likely to retard the due growth and development of the body. If so, no one should become a smoker till he is well past the period of puberty. Boys, moreover, have no excuse for smoking, for they are spared the hard wear and tear of adult life.

Now, after eliminating those who from idiosyncrasy cannot, and those who from bodily ailment or from tender years should not smoke, there will still always be a large residuum of happy folk who can smoke, enjoy smoking, and are indeed the better for it. These are they who use tobacco without abusing it—use it, that is to say, in moderate quantity, in due season, and honestly for the sake of the comfort which it gives them—a comfort every bit as legitimate as that which drinkers of tea, coffee, or wine extract in each case from their favourite beverage.

A few words on each of these points. By moderate smoking is meant smoking only just so much and so often as each man finds to be good for him. It is with tobacco as with alcoholic drinks.

Every man of mature years, sound health, and common sense soon gets to know what is the limit of safe indulgence for himself. However widely this limit may vary in different individuals, the following rule is absolute and unalterable—that when a smoker begins to ail bodily, or to be getting listless, dreamy, and disinclined for serious thought or action, or to shirk the duties of social intercourse, this limit has been exceeded.

Tobacco should be used as supplementary to food, not as a substitute for it. The season, therefore, for healthy smoking is after a meal. Tobacco should not be taken on an empty stomach (unless to stave off hunger) any more than alcohol. Smoking merely to kill time, or to colour a pipe (!) is a childish abuse of tobacco.

Against moderate smoking in a healthy person who enjoys it, not a single argument of any weight has yet been advanced. Perhaps the most plausible of them is this: that every smoker daily imbibes a small quantity of tobacco-oil and nicotine; and as these substances taken by themselves in the pure concentrated state and in large doses are highly poisonous, therefore every habitual smoker is slowly poisoning himself. Just as reasonable is it to condemn all alcoholic drinks, such as wine, beer, etc., as pernicious, because a draught of pure alcohol will nearly or quite kill a man; or to condemn tea and coffee as dangerous drinks, because their active principles, theine and caffeine, taken alone and in large doses are poisons. One of the best established truths in medical science is that the same physiological agent, according to the dose given, may produce effects which differ not merely in degree but *in kind*. The idea of small doses of tobacco or other such agent slowly accumulating in the system and at length producing the effect of a single large dose is *à priori* absurd, and also contradicted by experience.

So much, and often so much nonsense, is prated about the evils of tobacco that its virtues rarely get a hearing, and yet the latter are many and great. To quiet nervous unrest; to soothe a ruffled temper; to favour calm and impartial thought; to steady and clear (*not* to cloud) a confused over-worked brain; to counteract the effects of physical exhaustion—these are just the things which tobacco does, and if it can effect these ends safely and pleasantly, who shall deny it a place among God's good gifts to men?

E. B. Gray, M.D.

THE STAPLES OF CEYLON.

No. 1.—CINNAMON.

Cinnamon, as the oldest, and once the most important, staple of the Colony, demands to be first noticed.

Allusion is made in Holy Writ to this spice: in Exodus, chap. xxxiii. ver. 23; in Proverbs, chap. vii.; and in Songs of Solomon, chap. vii. ver. 17.

Herodotus states that cassia, a species of *laurus*,* used as a substitute for cinnamon, and from which was extracted an aromatic oil, used by the Jews as a perfume, was a native of Arabia, but that cinnamon was brought there from India by the agency of birds. This historian records that cassia grew on the borders of a sheltered lake, which was frequented by animals of the vampire bat tribe, and that the Arabs made raids upon them, protecting their eyes from their assaults, for the sake of obtaining the spice; and while the bats temporarily withdrew from the borders of the lake, the Arabs collected the cassia.

A more extraordinary account is given by the historian of the mode in which cinnamon was procured. The Arabs, he states, were in entire ignorance of the spot where the spice was produced, but their impression was, that in the country where cinnamon grew, large birds collected together a quantity of the shoots and small branches of the shrub, and with these constructed their nests, on inaccessible mountains. To obtain the precious materials of which the nests were composed, the natives deposited large pieces of flesh near to the localities frequented by the birds, which carried them to their nests, and these, not being sufficiently strong to bear the increased load, fell to the ground, the natives collecting and transporting the spicy materials to other countries.

The great expense and sea risk involved in the transport of Oriental merchandise in ancient times, occasioned its consumption to be limited to the rich. These, however, esteemed the spice more for its scent than as a flavour to food, and it was largely used in regal funereal obsequies. It is stated that the quantity of cinnamon and cassia burnt on the funeral pile of Poppæa, Nero's wife, exceeded the importation of one year.

* The cassia of commerce is sometimes thought to be the bark of the cinnamon tree grown in other countries than Ceylon, viz., in Sumatra and Cochin China; and also Ceylon uncultivated or jungle cinnamon, imported into England, and sold as cassia.

In more modern times, the Venetians monopolised the supplies of spices to the rest of Europe, but in 1498 they, in their turn, were ousted from the trade with India by the Portuguese, who contrived to obtain the permission of the native authorities of Ceylon to form a factory in that island. Having obtained a footing, the Portuguese constructed a defensive fort at Colombo, and by entering into a treaty with the King of Candy, based on the terms of their affording him aid in any local or foreign war, that potentate bound himself to furnish them yearly with a large fixed quantity of cinnamon.

The Dutch who, at that period, had made a successful lodgment in the East Indies, tried to become, in the first instance, partners with the Portuguese in this lucrative branch of commerce, and in 1645 succeeded in their attempt. In 1652 the two nations quarrelled, and six years later the latter were expelled by their rivals.

Under the Dutch *régime*, close monopoly was the order of the day; but cassia, from the Malabar coast, came to Europe through other nations; and, as the Dutch had always depended upon spice for exportation—collected from the jungles of the interior of Ceylon—which spice, from its wild state, was hardly superior to cassia,—their governments, local and home, found that their monopoly could only be preserved by the cultivation and consequent improvement of the spice.

In 1765, Falck, at that time Governor of Ceylon, tried the experiment of *cultivating* cinnamon in the neighbourhood of Colombo. It met with success, and was continued on a larger scale by himself and his successor in the government. In 1793, the preserved plantations were so extended that they were able to furnish the required supply sent forward annually to Holland for sale, without the aid of the quantity of wild cinnamon which they used to obtain from the King of Candy, collected, as has been before stated, in the jungles of the interior of Ceylon. This latter source of supply was every year becoming more precarious.

The Dutch established a veritable Draconian code of penal regulations to protect their monopoly, for they enacted—"That the selling or giving away the smallest quantity of cinnamon (even were it but a single stick), the exporting of it, the peeling of the bark, the extracting the oil either from that or the leaves, or the camphor from the roots—except by the servants of Government, and by their order—as well as wilful injury of a cinnamon plant, were crimes punishable with death, against the person committing them and any servant of Government conniving in the offence."

On the capture of the Colony by the British in 1796, a large quantity of cinnamon was found in the stores, and was sold to the English East India Company. For some time an agent of the English East India Company resided in Ceylon, to whom the local government sold the cinnamon that was collected. Up to 1832, the monopoly was continued by the English Government, but pecuniary penalties were substituted for the punishments of loss of life or limb prescribed by the Dutch on any infraction of their regulations. There was one clause, peculiarly harsh and oppressive in the regulations, carried out even under the milder rule of the British, viz.:—"If a cinnamon bush existed or sprung up in the garden of any inhabitant, the owner could not regard it as his own property; he could not eradicate it and substitute a cocoa-nut tree or other product; but was forced to cultivate the cinnamon bush for the Government."

On the cinnamon trade being declared open in 1833, all these vexatious and oppressive regulations fell with the abolition of the monopoly; and it should in fairness be stated, that for several years the penalties enacted had been but slight in amount. About this period, the arguments of the advocates for a continuance of a modified monopoly, and those in favour of its complete abolition, were ably and strongly put on both sides. The tenor of the arguments of the former were, in effect, that Ceylon, having a singularity of soil and situation, was enabled, all but exclusively, to produce cinnamon of the highest quality, and that the demand in the markets of the world for cinnamon was in no degree proportioned to the possible supply that Ceylon would give—on the contrary, far less; it was urged that the Government retaining in its hands the sale of this luxury—the result of a natural, and not of an artificial monopoly—could well afford to give, in exchange for each pound of cinnamon, a price which would more than return the average profits realised upon any other commodity produced in the island. It was also contended that the term monopoly was hardly applicable in the case of the sale of a natural product, conducted by a Government as a source of income, to assist it in carrying out most important works of a local character, and superseding the necessity of other taxations; and that the word monopoly was so tabooed, that any system to which it was applied, whether justly or unjustly, was cried down without a hearing.

On the other hand, it was argued by the advocates for the abolition, *pur et simple*, of the monopoly, that it bore injuriously on the Colony in two ways: 1st, positively, as it was productive of actual inconvenience and injury to the land owners; 2nd, negatively, in as far as it deprived the colony of advantages which it would otherwise reap.

If cinnamon grew on the land of an inhabitant, he was not permitted to use it as he would be entitled to dispose of other products of the soil; neither was he permitted to root it up as an obnoxious weed. Other most vexatious and oppressive regulations existed in regard to it; and, although, if the monopoly were retained, something might indeed be done to render the system less inconvenient, the highest perfection to which that system could be brought would be to place the inhabitants as nearly as possible in the same situation as if cinnamon were unknown. But were such inhabitant permitted to avail himself of the bounty of nature, by cultivating the spice with which Ceylon has been favoured, such individual, as well as the colony generally, would derive great benefit.

It was further argued that thus far, the inhabitant was positively injured; and that, in reference to the interests of the Government and the merchant, the abolition of the monopoly would be a great desideratum, for as large a direct revenue would be derived under freedom of trade combined with export duties from cinnamon, as that obtained under the monopoly, with an infinitely greater indirect revenue; while, at the same time, the cultivator would be permitted to enjoy, undisturbed, the produce of his land, and to reap the benefits which nature had held out in the monopoly of the most delicious of spices;—and that the question of the retention or abolition of the monopoly turned mainly upon this point, viz., the fact that the consumption would not admit of increase. It was said, moreover, that if such were the case, cinnamon would stand alone among the products of the earth; that such could not be; that it was well known that the average quantity sold by the East India Company, when they had the control of the sale in Ceylon, shortly after the taking of the island from the Dutch, did not exceed 400,000 lbs. a year, and that the Government now sold 600,000 lbs. per annum. It was asked if the Government would do right in reducing its sales again to 400,000 lbs. if it were certain of receiving the same sum; and if it were not of public advantage that one-half more tonnage should be employed in conveying it to England; and that employment should be given to so many more manufacturers in the preparation of the spice. Why then should it be assumed that the world now used the maximum quantity of this article? Careful housekeepers were sparing of cinnamon, knowing it to be a most expensive spice. If it were sold cheaper, they would be less frugal, and it might be used in many houses in which it did not enter.

E. Rawdon Power.

[to be continued.]

THE POTATO.

It is popularly believed that we are indebted to Sir Walter Raleigh for this most important of esculent vegetable foods, the cultivation of which extends over a wider area than any other food plant; indeed, so universally is it diffused over the habitable globe, that it is found in almost every position where man can subsist: even in the Arctic regions it struggles for existence, producing stunted watery tubers in an imperfect state of development, whilst it flourishes in tropical as well as temperate climates, so easily does it adapt itself to circumstances. It ranks among the most useful of vegetable productions; it is highly prolific, and its value, which is incalculable, is hardly understood to its fullest extent.

The whole family of the *Solanaceæ* is suspicious—great numbers are narcotic, and many of them poisonous; though in the case of *Solanum nigrum* (one of the potato family), the young and tender shoots, when cooked, are used as a vegetable in some countries. It is curious to note that the poisonous bitter sweet, the tobacco plant, the tomato, the Cape gooseberry, the capsicum, the deadly night-shade and the henbane, the thorn apple, mandrake and petunia, all belong to the same genus as the potato; which most excellent vegetable was at first regarded with the eye of indifference by our forefathers, until it was imported by Sir Walter Raleigh, in the seventeenth century, who endeavoured to attract public attention to it, and cultivated it himself on his estate in Ireland. So, although not actually the first to introduce it, he was, nevertheless, the means of first bringing it into public notice. He could not, of course, have been acquainted with one half of its useful properties, and little did he dream that in after years it would radically revolutionise the diet of the country where it was first cultivated. It was known by the Indian name of the sweet potato, "*Batatas*," and under this name it continued to be spoken of and written about for some time after its introduction. We read that it was supposed that it would be found useful for feeding "swine and other cattle." The scientific analysis of the potato is not within the province of this paper, and it will be sufficient to say that it is rich in starch, that it does not contain as much gluten as our

cereals, and that it is wanting in nitrogenous matter. It is, however, more nutritious than any other of our succulent vegetables. To derive the necessary nourishment from a diet almost exclusively consisting of potatoes, the stomach requires a considerable bulk of this kind of food; and it has been noticed that the Hindoo who lives on rice, the Negro who lives on plantain, and the Irishman who lives on potatoes, are all, more or less, "pot-bellied," the Irishman, however, not so much so as the others; and this circumstance is attributable to their diet, which does not contain a sufficient proportion of gluten, and so necessitates the consumption of a large quantity of the food: for potatoes are not nearly so nutritious as wheat, and the constant employment of them as a chief article of diet is not favourable to the development of the physical powers; neither does it tend to enlarge the mental faculties. In fact, Professor Muelder, a celebrated Dutch chemist, has said, that "the potato is the cause of the physical and moral degeneration of those nations who use it." Potatoes have been said to possess the advantage of solidity, like bread, and to have the healthful properties of many fresh vegetables, without their acidity. As an article of diet, when not used exclusively, they are of untold value; so universal has the use of them become, that they are almost an essential dish at dinner, for who ever thinks of dining without potatoes? We have said that the potato is wanting in mineral substances, and it is curious to note how, in Ireland, this deficiency is supplied by the water, which is almost universally strongly impregnated with mineral matter.

The use of potatoes is a preventive against scurvy, if not an actual cure for it. Potatoes that have been exposed to the air, and have become green, are unwholesome; and new potatoes, *i.e.*, unripe ones, have much to do with the prevalence of cholera, and such like diseases during the summer months.

Humboldt has calculated that the quantity of ground which will grow thirty pounds of wheat will produce one thousand pounds of potatoes. In Ireland an adult will consume ten and a-half pounds in one day. Potatoes are narcotic, and the water in which they are boiled is unwholesome if not deleterious; but the process of boiling would seem to free them from all that is narcotic or noxious in their juices, imparting these objectionable properties to the water. As a staple article of food, the potato has been the means of preventing famine; though, on the other hand, the lower classes of Ireland, being almost entirely dependent on this vegetable for subsistence, have experienced some years of misery in consequence of a universal failure in the potato crops.

The varieties of the potato that are cultivated are numerous; new ones are continually appearing; and the best sorts that are now sold in our markets are doubtless very superior in size and quality (the effect of judicious cultivation) to the tubers which Sir Walter Raleigh first introduced to notice.

The soil in which it is grown will be found to have considerable effect in determining the quality of the potato; and almost every district has its peculiar varieties, their names being quite arbitrary or local. Most kinds are vastly improved by removal to a different locality; hence growers rarely use for many years in succession their own tubers for seed, but continually renew the stock by purchases from another district. One tuber will produce as many separate plants as it has eyes, but a piece of the potato must be planted with each eye or shoot. The many varieties, differ in form, size, colour, and in their time of ripening; some are more prolific than others, some are naturally waxy and watery, and some are mealy, which is an unfailing characteristic of the best varieties. A mealy potato is more digestible and more wholesome than a waxy or watery one. Various methods of cultivation are pursued with more or less success in different localities. In France, the culture of the potato to a great extent is mainly due to the exertions of Parmentier. We will only allude to the potato disease which some years ago attracted so much notice. Many persons do not know what it is, and it will be sufficient to say that it is the effect of a mould, or species of fungus, "whose spawn attacks the tissues of the plant in every direction, being present in the tubers and stems as well as in the leaves." The growth of this fungus is encouraged or retarded according as the season is favourable or unfavourable to its development. Since the ravages of this disease have become universally apparent, the rapidly increasing cultivation of the potato has received a slight check. Potatoes are more important than any other vegetable as a variety of human food, and on the score of their economy are advantageously used in large quantities by the working classes, though their nutritive value is not great. They are, however, easily cultivated, easily kept, easily cooked, and easily digested; but, being wanting in fat and nitrogenous matter, they require to be eaten in conjunction with those kinds of food which will supply the deficiency; hence they are generally eaten with meat, or with milk as in Ireland, or with curds as abroad.

INDIAN TEA.

No. 5.—Precautionary and Economic Desiderata.

The experience of both China and India proves that the tea which evolves the most grateful natural fragrance is mountain grown, but unfortunately it is rarely possessed of the strength and pungency so much prized by judges at home. As the plant is reared nearer the hot valleys, physiological changes occur which conduce to the copious production of leaves and strength, but at the expense of aroma. In order to remedy this deficiency the Chinese manipulator has recourse to a system of artificial flavouring which for green tea is managed as follows:—Taken hot from the last roasting, a portion of the Hyson to be scented is poured into a chest to the depth of about two inches, and over this a handful of cowslip flowers is strewn. Another layer of tea and flowers is added, and so on until the chest is full. It is then placed aside in a warm room for twenty-four hours. The proportion of flowers used is three per cent. Next day the mixture is fired for two hours and the shrivelled cowslips sifted out, the remaining tea becoming stock for the scenting of the rest not as yet treated. Of this stock the proportion deemed necessary for flavouring fresh tea is one per cent., and it may be used even after a considerable interval, provided the tea to be perfumed is previously heated, and fired for two hours. For black tea a different formula is adopted, which indeed varies considerably in the several districts. The flowers of the *Chloranthus inconspicuus*, *Gardenia florida*, *Olea fragrans*, and *Jasminum sambax*, are those most commonly employed. One or other, or a mixture of these being placed in sieves under those containing the tea, the whole is set over a charcoal fire for two hours, during which the aroma is communicated. In the case of caper the scenting is accomplished by sprinkling over it the flowers reduced to powder during the progress of the final firing. In some localities where the finest qualities are prepared, especially those for mandarin consumption, it is usual to place crape bags filled with fragrant flowers amongst the heaps of tea in the fermenting chamber, and indeed to keep the two in contact throughout each subsequent stage of the manipulation. Agreeing as the Chinese do that no factitious scent which can be communicated to tea at all equals its natural aroma, it may seem strange that the system of artificial flavouring should be so universally practised; but our

astonishment ceases when we reflect that the gardens which yield the finest growths, possessed of full indigenous bouquet, are comparatively as limited in extent as the famed German vineyards of Johannisberg and Steinberger, so celebrated for their exquisite wines. Apart from the value communicated to tea by a judicious system of flavouring, another most important purpose is accomplished, which seems hitherto to have escaped the observation of critics. Newly fired tea is remarkably sensitive to, and is almost as insatiable an absorbent of contiguous smells, whether good or bad, as raw silk is of water, or caustic lime of chlorine gas. It is necessary, therefore, to fortify it (when not possessed of a strong natural fragrance of its own) by saturation with some agreeable perfume, so that no unoccupied pores may remain to invite the lodgement of any objectionable taint. As another and well-known means of security, by way of a mechanical defence, tea is packed hot in carefully prepared sheet lead covered outside with perfumed paper, and placed in well-seasoned, thickly papered chests, of which even the interstices occasioned by the lids are papered over. That such precautionary measures are not unnecessary may be gathered from the fact that the coolies who convey the packages from the tea districts to the shipping ports sometimes consume several weeks on the journey, and they do not hesitate to squat or recline on their burdens whenever they feel tired or come to a halt for the night. Under such circumstances, unless the tea were doubly protected by a powerful perfume and an almost impervious covering, it would inevitably acquire an offensive smell from the ground on which the packages frequently rest, from the unclean skins of the bearers, or from the vile and evil-smelling condiments which they delight to use with their food. But once safe on board a clipper ship, having no other cargo besides tea in the hold, the risk from contamination is small, so long as the packages remain uninjured and do not come into contact with sea water.

In addition to a liability to lose its sound condition, from the paucity of natural or artificial scent, and the primitive rudeness of the packages containing it, Indian tea has to contend against another formidable enemy which never assails the produce of China. The ships which convey the former from Calcutta carry miscellaneous cargoes of jute, linseed, hides, horns, and other oily and imperfectly dried vegetable and animal substances, which ferment and sometimes putrify during the voyage home, impregnating the tea on board with a fetid, or at least unsavoury odour, leading to disputes connected with the settlement of freight, and causing loss to all concerned. It must be evident, therefore, that instead

of any carelessness in the packing of Indian tea being tolerated, the risks apparently at present inseparable from its conveyance home demand special attention to the hermetically tight state of the packages; and the specialities of its inland transport being similar to those encountered in China, call for the employment of the same, if not an increased, degree of artificial perfume in the tea itself. As matters stand, the absence of exosmose, which would tend to neutralise and defeat the contaminating effect of any outward odour, even although the leads and packages might be somewhat defective, invites the endosmose of evil-smelling gases. Something might no doubt be done by using double leads and papering the chests; but any one can see that this would add to the expense of an article, the production of which must be managed with the utmost economy to enable Indian tea to compete successfully with its Chinese rival. Fortunately there is a substitute for sheet lead, which for lightness, toughness, cheapness, density, and freedom from smell, stands quite alone. In 1841 Mr. W. E. Gaine discovered that by dipping pure white blotting paper in sulphuric acid of specific gravity 1·845, reduced by half its bulk of distilled water, vegetable parchment was produced. It is believed to be absolutely indestructible except by fire, and was pronounced by the late Professor Graham, Master of the Mint, to be free from porosity. Dr. Hofmann, of the Government School of Mines, has also reported most favourably on the merits of this remarkable substance. Surely, therefore, a material uniting in itself so many estimable qualities cannot fail sooner or later to supersede expensive sheet lead as a lining for Indian tea packages.

In the utilisation of the subsidiary products of a tea garden Indian planters have still to learn some lessons from the Chinese. Without discussing the Chinese methods of economising dust and fannings, with whose appearance in the more attractive forms of caper and brick tea many persons are familiar, or of the uses to which they apply their overplus seed, and the valuable oil which they extract from it, it will be sufficient on this occasion to throw out one or two suggestions based on experiments conducted here.

Towards the end of 1869 Dr. Thudichum, at a meeting of the Society of Arts, exhibited several varieties of effervescing wine made from Pekoe, Kaisow Congou, Oolong, and other fine China teas. It evinced such good keeping qualities that after a considerable interval the addition of yeast and sugar, and the maintenance of the liquid at a temperature of about 80 deg. Fahr. for six weeks, failed to produce secondary fermentation in more than one per cent. of the bottles. Hitherto one of the greatest annoyances con-

nected with consignments of Champagne to distant countries has been a tendency to re-ferment in the bottle during the voyage, a disadvantage which in tea wine would evidently be reduced to a minimum. The manufacture of tea wine on the spot would undoubtedly meet a want not only in India, but in China and Japan; and, besides affording a valuable product, would ultimately lead to the withdrawal from the market of all fannings and dust—a circumstance which would exercise an important and cheering influence for planters and merchants on the price of leafy tea in Mincing-lane.

The extreme delicacy of tea-seeds, which retain their vitality only a very short time out of the ground, and the consequent difficulty attending their transport in a sound condition to a temperate country, has hitherto militated against such extensive and exhaustive chemical research as their composition merited. After some trouble and delay, I recently obtained a quantity of fair average Indian seed, and although only about one-fifth proved available for experiment, sufficient remained to place in the hands of Dr. Muter, who furnished me with the following statement:—

"The seeds, when decorticated, were found to contain 54 per cent. of fatty matter, of which it was possible to extract 33 to 35 per cent. by a judicious system of hot pressing. The fat thus obtained was found to be of the consistence of butter at ordinary temperature, but at 32 degs. it melted to an almost colourless oil. This oil possessed a faint but characteristic odour, and among other trials made with it, it was found to form a fairly good soap, and to be useful for cooking. Mixed with sugar it would make an agreeable sweetmeat. After extracting the fat, the next application of the seeds which I would suggest, would be that of forming a food for cattle. By proper management I succeeded in obtaining a cake yielding, on analysis, the following results, which, for the sake of comparison, I place side by side with an analysis of a good ordinary English oil cake:—

	Cattle Food from Tea-seeds.		Linseed Cake.	
Moisture	7·40	..	14·50	
Fat	15·80	..	12·20	
Nitrogenous, or flesh-forming portion	33·88	Nitrogen. = 5·42	31·00	Nitrogen. = 4·90
Gum, sugar, etc., or heat-producing portion ..	19·25	..	24·44	
Woody fibre (cellulose) ..	16·62	..	11·50	
Mineral portion	7·05	..	6·36	
	100·00		100·00	

"These results speak for themselves, and require no comment on my part. I regret that, owing to the partial decomposition of the seeds, it was impossible to bring to a satisfactory conclusion a set of experiments for the purpose of ascertaining the fitness of the seeds for producing a beverage for human consumption, and the palatability of the same; but from the results of the preliminary investigations made, I consider that by a proper manipulation of the fresh seeds, and by the aid of slight fermentation, roasting, etc., a powder might be obtained which, employed like cocoa, would soon acquire a marketable value. I shall be happy

to communicate my ideas on this subject to any gentleman who has facilities for carrying out the necessary experiments in India, and I think that if the matter were fairly looked into by our Indian planters, they would be induced to reverse the verdict already pronounced, to the effect that the manipulation of tea-seeds will not pay."

From this report it is evident that in overplus tea-seed we possess another waste product which may be made to yield a profit on the oil as well as on the valuable oil-cake residue. Certainly it seems a pity that so much precious material should any longer be devoted to the mere secondary purpose of manure.

Having thus endeavoured to review with impartiality a subject which possesses a world-wide interest, the conclusions arrived at may be epitomised in the form of a reply to the query—under what circumstances may an Indian tea estate be expected to pay? It not only pays but becomes remunerative when the owner, having purchased good land in a suitable locality at a reasonable price, works it by means of native (not imported) labour, under his own superintendence or that of a qualified, well-remunerated manager having an interest in the venture, but who is expressly debarred from engaging in any similar enterprise on his own account, and who sells his produce *on the spot*, or at least in India. The responsibility of exportation should form no item in a planter's programme, out ought to be transferred to and accepted by the merchant, as is done in China. Doubtless the various commercial firms at Calcutta, Bombay, and Chittagong would at all times gladly take the risk of the home market, if assured that the planters would cease to interfere, but confine their operations to India. By the former the tea might be made up into convenient chops — not sent straggling home as at present, in little dribblets covered over with mysterious diagrams and decorated with capital letters like a series of problems from Euclid—and so arranged and timed that it might be shipped in vessels carrying no other cargo. By the adoption of the best features in the Chinese system of management united to skill, first-class machinery, the economical utilisation of subsidiary products, and moderately priced transport to the coast, the sanguine expectations originally entertained may yet be realised. It must not be forgotten that we are dealing with a comparatively new industry, and that the past has been a succession of expensive errors which nothing except the wonderful vitality of the enterprise could have surmounted. But the hard-bought experience and its salutary lessons, it is to be hoped, have not been in vain. The clue to the labyrinth is now in our hands, and the future, *virtute et labore*, is full of hope.

William Cochran.

THE DIET OF THE PEASANTRY OF SCOTLAND.

The ordinary food of the Scottish peasantry, until recent times, was not very different from that of the north of England. The bread generally used was made of oatmeal or of barley-meal. Wheat was scarcely even cultivated. In the middle of last century a wheaten loaf was with difficulty to be found in Carlisle. At that time nothing of the kind was to be seen in Scotland, except on the tables of the wealthy; and, even in their houses, the bread chiefly used was made of oats or barley. Barley-meal porridge and oatmeal porridge were among the chief articles of food.

There is a song, the effusion of a merchant tailor in Aberdeen, in the latter part of last century, in which high praise is given to the *Kail-brose of Auld Scotland*, as the great national article of food. *Kail-brose* is made by taking the lighter part of the soup of *Kail* (kale), boiled with beef or mutton, and pouring it upon oatmeal. It has ceased to be a popular dish in Scotland, and is probably nowhere now in general use, other modes having been found of using both oatmeal and greens to better advantage. The *kail* of which it was made, was the *lang-kail* (long kale), then the only variety of the *Brassica oleacea* cultivated in Scotland, except the cabbage, which was introduced by Oliver Cromwell's soldiers. It is now rarely to be seen, and only in the districts in which improvement and cultivation are most backward. It is probably the coarsest variety of the *Brassica oleacea* anywhere in cultivation; yet until the middle of the seventeenth century, it was the only variety cultivated in Scotland, and it continued to be much in use until a comparatively recent date. *Custocks*, the stalks of kale, boiled and eaten with a little butter, formed a common dish of the Scottish peasantry in times past, but for more than one hundred years this dish has been little used.

Barley-meal is much less used in Scotland at present than it appears to have been in former times. In fact, it constitutes a very small portion of the food of the peasantry. Oatmeal is, however, everywhere a principal article of food. It is used both for making porridge, and for making oat-cakes, or *bannocks*, which may be described as a thick oat-cake, and is in general

very imperfectly baked. In some parts of Scotland, bannocks are the form of oat-bread generally used; in others very thin cakes are most common. The farm-servants in some districts of Scotland still adhere to the use of *brose*, which is made by merely pouring boiling water upon oatmeal and stirring it about. Brose is, of course, an almost uncooked dish, and is suitable only for a hungry man with a very good stomach; but many of the ploughmen in the richest agricultural districts of Scotland subsist upon it almost exclusively, with the addition of a little milk. This is the case more particularly in those districts in which the *bothy* system prevails; that is, where the farm servants, unmarried men, live in *bothies* or lodges which form part of the farm buildings. What the effects of this system are in respect of morality and the general interests of society, it does not belong to our present purpose to state; but the low social state of the bothy men may be inferred from the single fact of their feeding almost exclusively upon brose. No one article of food could perhaps be found better fitted to sustain life than oatmeal brose with milk; but the repetition of this three times a-day, with scarcely any variation, cannot be favourable to health, and in fact the ploughmen so nourished become old before their time, and very seldom pass the age of fifty years ere they begin to break down. The practice in the bothies is that each man has his *bicker*, a wooden dish, in which he makes his brose, and having emptied it, as of course he is expected to do, he turns it upside down, and lays his spoon on the top of it, and thus it remains till he needs it again. It never receives any washing, and is not supposed to need any. The writer has heard of a ploughman in Perthshire who boasted that his bicker had been constantly used and never washed for thirty years. The bothy system prevails only in certain districts of Scotland, chiefly in Edinburghshire, Haddingtonshire, Fifeshire, Forfarshire, and the lowland part of Perthshire. In almost all other parts of the country it is quite unknown, and a system of domestic life prevails among the peasantry.

Bread made of pease-meal—in the form of very thick cakes called *pease bannocks*, but imperfectly baked—is used to a considerable extent by the shepherds and agricultural labourers of some districts—partly pastoral, partly agricultural—in the south-east of Scotland. Elsewhere it is very seldom to be seen. The *pease-bannock* is only suitable for the strongest stomach, and its flavour is very unpleasant to almost all but those who have been accustomed to it from their early years. Some of these, however, even when they have acquired wealth, and can indulge themselves in any kind

of food they please, without regard to economy, retain their early liking for it.

Potatoes are now a general article of food of the Scottish peasantry in all parts of the country. As recently as the middle of last century, the potato was very little known, and its field cultivation had not been attempted. A few potatoes were grown in the garden, and were generally roasted in the embers of a peat fire as an occasional luxury, but no further use of them was thought of. The rapidity with which they came into general cultivation is one of the most remarkable facts of its kind, and shows that old usages are not so unchangeable as is sometimes imagined.

As to animal food, the peasantry of Scotland generally see but little either of beef or mutton. Both, however, are occasionally purchased from the butchers in the towns and villages. In the pastoral districts, mutton is a more common article of food than elsewhere; but even in shepherds' cottages, the supply is very limited. Until recently, it was the ordinary practice of all people in good circumstances—such as proprietors of small properties farming their own lands, tenants holding farms of considerable extent, and the like—to lay in a store of salt beef for winter by killing a bullock or cow, called the *mairt*, because killed about the term of Martinmas, in the beginning of November; and this was calculated to supply the wants of the family until the ensuing spring, or even the beginning of summer. The practice is not yet altogether discontinued in some parts of the country, although the greater facility of obtaining fresh meat during winter has made it much less prevalent than it was even in recent times. It is but of late that the improvement of agriculture has made it possible to feed cattle in winter so as to maintain them in good condition, and to fatten them for the butcher. How thoroughly this has been accomplished, it is unnecessary to say; but in former times cattle were always expected to become lean during the winter, and those intended for the winter supply of beef were therefore killed and salted when the winter began. This was the case in England as well as in Scotland.

Pork is now a very common article of food of the Scottish peasantry. Generally, indeed, it may be said to be their principal article of animal food. Almost every farm servant who has a house of his own keeps a pig or two, and villagers follow the same practice. It is not very long, however, since this practice became general. There was a prejudice against swine amongst the Scottish peasantry, as unclean animals, and their flesh was very little used.

It might be supposed that poultry would be kept in great numbers, and that their flesh and eggs would form a considerable part of the food of the peasantry, but this is not the case. Farmers very naturally object to the keeping of poultry by their servants, because of their devastations in the fields, and fowls are most abundant in the districts where agriculture is least advanced or which are least suitable for it. From these districts large quantities of fowls and eggs are sent to Edinburgh, Glasgow, and other towns, for sale. They are a source of profit to the peasantry, but do not contribute so much as might be expected to their own ordinary food supplies.

In districts near the sea-coast, fish has long formed a common article of food, although not used to the extent that might be expected, there being a general notion—not confined to Scotland—that fish is not worth much as a substantial article of food, however pleasant it may be to eat. The consumption of fish, therefore, was until recently necessarily limited to the neighbourhood of the sea and of the fishing villages; and now, railways having in most places afforded to the fishermen the opportunity of a wider and better market, the price of the commodity has increased, so that the peasantry cannot procure it as before. In like manner, in former times, the inhabitants on the banks of rivers consumed large quantities of salmon and salmon-trout, but now these are mostly carried off to other parts. We are sometimes told, as a proof of the vastly greater abundance of salmon in our rivers in former times than in the present, that it was common for servants to stipulate that they should not have salmon for dinner oftener than three times a week. But the fallacy of the argument will appear when we consider that the use of salmon was then limited to the districts immediately bordering on the river, whereas now it extends over the whole country. The quantity obtained from the Tweed or the Tay in a good season would still be too great for the inhabitants on their banks.

The most remarkable thing, perhaps, in the diet of the Scottish peasantry, is the want of a proper supply or proportion of vegetable food. They use bread and potatoes, but in many cases very little vegetable food of any other kind. Kale and cabbage grow in the garden, but it is only when broth is made—which implies beef or mutton—that use is made of them. In many cases, the dinner consists of salt herring or a bit of bacon with bread or potatoes, and tea—the use of which has become general in almost all parts of the country, and which is often a part of the principal meal of the day. Coffee is very seldom drunk. The effect, how-

ever, of the continued use of this kind of diet is a scorbutic tendency, which manifests itself in various ways, and particularly in the early decay of the teeth. This is more observably the case amongst villagers—especially in manufacturing districts—than amongst the strictly rural population. These villagers have usually very small gardens—many of them have no garden at all; and the quantity of greens, turnips, and other vegetables produced, even where there is a garden, is insufficient for the real requirements of the family. But in reality, there is in Scotland, among the humbler classes of society, a very imperfect appreciation of their value. They are little cared for even as an occasional luxury, but rather are despised as things unworthy of attention. There are very many gardens in Scotland which do not yield to their possessors a single dish of green peas in a year. As to spending money on green peas, or any such vegetable delicacy, a Scottish peasant or villager would never dream of it. There would be no difficulty in pointing out villages in which the scorbutic tendency is very generally displayed, whilst streams and ditches in the neighbourhood are full of water-cresses. But nobody thinks of eating water-cresses. They grow and rot uncared for.

The gardens of the Scottish peasantry are, in general, very small, and when not—as is sometimes the case—chiefly planted with potatoes, they contain little else than kale, cabbages, leeks, onions, and perhaps a few carrots and turnips. The luxuries which the garden might afford are utterly unknown. There may be a small plot of parsley, but there is none of any other flavouring herb. A few flowers are sometimes to be seen, and a bush of southern-wood; but the taste for them is not general, except among the villagers, who in some parts of the country have their horticultural societies—recent, however, in their origin, and completely an innovation—and vie with each other in producing fine roses, carnations, pansies, etc. Where these horticultural societies exist, great pains are also bestowed on the cultivation of gooseberries, but the bushes are pruned and trained with a view to the production of the biggest possible berries, rather than of a large crop; the prospect of success in obtaining a prize at the "show" being preferred to the delectation of the cultivator's children. In very many, however, of the gardens of the peasantry in strictly rural districts, there are no gooseberry bushes, or only one or two, and currant bushes are equally rare. In some places, where the cottages of shepherds are situated at a great elevation above the sea, it is probable that the gooseberry and the red or white currant would not succeed well. At all events they are not cultivated, and the only fruit-bearing

shrub that appears in the gardens is the black currant, of which there are almost always a few bushes, and which is hardy enough to succeed well, wherever human habitations are to be found in Scotland.

One thing much to be regretted in regard to the diet of the peasantry of Scotland is the want of proper cookery, which is almost universally of the rudest possible kind, so that the materials at the disposal of the people are not employed to the best advantage, either in point of economy or of fitness for the palate and the stomach. It seems to be taken for granted that hungry folks should be ready to eat anything that is set before them, no matter how coarse it may be, or how unattractive it would be to those who have been accustomed to better fare. In the manufacturing villages the wives of the operatives have generally spent their youth as workers in the mills, and know nothing of domestic economy. The consequences are very sad for their husbands and their families. The roughness of the food presented on the table, and the general untidiness of the house, are very often among the causes which lead men to seek enjoyment in taverns, and so to waste their money and to contract habits of a very bad kind. How a remedy is to be found for this it is not easy to say, but it is of importance that the existing evil should be perceived, so that a cure for it may be sought.

Were this article not already so long, mention might here be made of some favourite Scottish dishes — favourite, perhaps, rather in former times than in the present—in use more among the middle class of society than among the humblest of the peasantry. This may form the subject of a future article, and may be illustrated by quotations from old Scotch songs and from the novels of Sir Walter Scott and others who have depicted the habits and customs of the people of Scotland.

John Montgomery.

Lord Burghley's dinner-party, given last month at Burghley House, in celebration of his majority, comprised 750 guests, and the following was the bill of fare :—24 turbots with Dutch sauce, 24 salmon with lobster sauce, 2 barons of beef, 16 haunches of venison, 8 dishes of roast beef, 8 dishes of boiled beef, 8 dishes of pressed beef, 12 galantines of veal, 48 quarters of lamb, 14 raised pies, 12 venison pasties, 200 roast chickens, 150 tongues, 100 hams, 12 lobster salads, 50 fruit jellies, 50 various creams, 70 dishes of mixed pastry, 24 Neapolitan cakes, 50 dishes of mince pies, 150 plum puddings; with potatoes, beans, and peas.

TORTILLAS.—THE MEXICAN'S "STAFF OF LIFE."

Of the many kinds of "bread-stuffs" in use among the different nations of the earth there is perhaps none more interesting than the *tortilla** of Mexico—interesting for one reason, that the mode of manufacturing this peculiar kind of bread was not introduced by the Spaniards or any other European colonists, but was known to the aborigines of the Mexican table-land, and practised by them long antecedent to the Conquest. This is clearly proved by the fact that the *metaté* and *metlapilé* (two utensils employed in the manufacture of *tortilla*) are found wherever there are ruins of ancient Aztec or Toltec cities. Nor is this confined to the limits of that part of the Mexican Territory known as the ancient empire of Anahuac. All along the table-lands northward, amid the ruins upon the Gila, San Francisco, and Colorado, amid the obsidian arrow-heads and broken pottery of the "Casas Grandes" and "Seven Cities of Cibolo"—in short, wherever you dig among the *débris* of Indian towns that existed anterior to the Discovery and the Conquest, your spade will strike upon the *metaté* and *metlapilé*, and will turn up bread-making utensils almost identical with those in use at the present day; indeed, altogether so—since the slight differences will not be greater than are found in different districts of the modern Mexican Territory.

We have not space to pursue this, which may be called the archæological branch of the subject, however interesting it be; our purpose is simply to lay before the readers of the *Food Journal* an account of the mode in which the *tortilla* is produced.

It is made of Indian corn (*zea maiz*). The ripe grain is gathered in from the fields, "shucked" and "shelled" from off the "cob." These are Anglo-American terms, and have nothing to do with the vocabulary of the Mexican *tortillera* (tortilla-maker). She—for it is a woman or girl who does the work—takes a quantity of maize—a quart, pottle, or peck, according to the extent of the family circle—flings it into a large, red, earthenware pot (*olla*), shaped like an ancient urn, with water enough to boil the corn, and a little lye (made from ashes) to soften it in the

* Pronounced *tor-tee-yá*.

boiling. The *olla* is suspended over the fire, or simply set upon the coals—or, in houses of the better kind, on a charcoal furnace, or *brazero*—where it remains till the corn is boiled to the core, and soft enough to be easily converted into a pulpy paste between the hither and nether millstones—the *metaté* and *metlapilé*.

The *olla* is now taken off the fire, and its contents allowed to get cool enough for handling. It may stand for hours, for days—if not required for immediate use; generally, however, the whole of the maize thus submitted to the process of boiling is made into *tortillas* on the same day.

When the corn gets cool enough to enable the *tortillera* to plunge her fingers into the *olla*, she does so, bringing out a handful or two at a time, and "dumping" it down upon the *metaté*.

It is now necessary to describe the *metaté*. This is a flattish stone of rectangular shape, about 18 inches in length, and 12 or 14 in breadth; its upper surface being slightly concave, and a little slanted from the horizontal. This slant is obtained by the stone having two conical projections (sometimes four) underneath, which serve as feet; so that the *metaté* resembles a stone stool with legs of unequal length. The object of the inclined surface will be evident, when the tortillera commences her work. She does this by placing the *metaté* in the middle of the floor, and kneeling in front of its more elevated end. A portion of the boiled maize is deposited upon the smooth surface close to the upper edge, while the *olla* containing the rest is within reach of her hand. She then seizes the *metlapilé*, which is a long, round stone resembling a French "bar" of bread, or more like the ordinary mower's scythe-stone, only larger. Taking it in both hands, she crushes the boiled maize into a paste of the consistency of very soft dough, at the same time pressing it over the lower edge of the *metaté*, till it drops into an earthen pan, there set to receive it.

So much for the kneading process. Now for the shaping of the cake, or *tortilla*, as it is called.

When enough "dough" has been made for the family meal, either the *tortillera* herself, or an assistant (more usually an assistant—the daughter, who commences her part of the performance while the mother is still engaged at the *metaté*) takes up a portion of the paste, sufficient for one *tortilla*, and with a few dexterous claps of the hands shapes it into a thin, round cake, smooth on both sides, and as symmetrical in outline as if its circumference had been traced by a pair of compasses. It is about as thick, and of the same diameter, as an ordinary breakfast plate.

So skilled are the *tortilleras*, with constant practice, that they

can take up the exact quantity of paste required for the cake, just as a "pug-boy" in the brick-field knows the precise amount of clay to be placed by the hand of the "moulder."

As soon as the *tortilla* is formed between the palms of the hands —the work of a half minute—it is flung upon the *tomalé*. This is either a flat earthenware pan, or a thin flat stone—in the better class of dwellings, a plate of iron, wrought or cast, square or round—in short, a "griddle," such as is used by the Scotch and Irish; or the "pikelet stone" of England. The *tomalé* rests upon stone props over the faggots of a fire, and being already heated, the thin cake is at once scorched on the side in contact with it. It is then turned by the *tortillera*, using the thin blade of a knife with an adroitness that savours of legerdemain; and in an instant the *tortilla* is ready for the table, to which it is at once carried. The maize dough, already well cooked in the boiling process, needs only the slightest contact with the *tomalé*, to give it that tenacity required to make bread of it.

When fresh from the fire and warm, the *tortilla* is supple as calf-skin leather, having a certain toughness. Allowed to cool, it becomes rigid as Passover-bread. But it is not then considered eatable—at least not palatable—and old *tortillas* to be eaten have to be damped, and once more thrown upon the *tomalé*. At every meal the *tortillera* has to return to her work, and kneel before the *metaté*.

Although the ordinary *tortilla* is not thicker than sole leather, there is still a thinner kind, made for keeping, or carrying on a journey. This is called *totoposté* or *totoporte*. It is much used by soldiers on a march, where they have no opportunity of taking a *tortillera* with them, and is carried in their haversacks as biscuit, which it really is—biscuit made of maize.

In eating the *tortilla*, it is torn into small pieces, each being doubled up into the shape of a spoon or scoop, with which the stew or sauce to be eaten is lifted and conveyed to the mouth, the improvised spoon being swallowed along with its contents, and a new one made for the next mouthful.

Two *tortillas* are often placed together, with a sauce made of tomatoes and Chili pepper placed between, and eaten as a sandwich. In this way they are very palatable, and in any case, the *tortilla* is a bread not to be despised; the only objection to it being a slight potash flavour, caused by the alkali used in softening the maize, and removing the shell from the grain. In Mexico and Central America it forms the daily bread of eight or ten millions of people.

Mayne Reid.

POPULAR FOOD ANALYSIS.

No. 13.—BEER—Continued.

Having last month glanced at the antiquity of beer, we take the subject up again, commencing with its use in England. The earliest mention of beer is that made in the Acts of Ina, king of Wessex, who framed rules concerning the sale of *mum* and *metheglin*, the former being a beverage made from grain, and the latter from honey. The national taste for malt liquors having increased, regular establishments for their sale began to appear, at which the lieges assembled and, getting inebriated, often engaged in amusements ending in brawls. Even in those early days, ale sellers were suspected of practising various schemes of adulteration and short measure, and men called in the official papers *gustatores cervisiæ*, or more commonly *ale conners* or *kenners*, were appointed by the manor courts. These *conners* were supposed to be men who really knew a glass of good ale when they tasted it, and their duties were to visit every ale-house from time to time, and to express their opinion whether the liquor sold was sound or not. They were also empowered to test the measures used, and to prosecute those employing false ones. The office of *ale kenner* still exists, but is merged in that of inspector of weights and measures, the tasting being in desuetude. If a *kenner* were to be now appointed with all his old rights and privileges, what a competition there would be for the situation! The Company of Free Vintners was formed in 1437, and the fraternity grew and prospered so much that, in 1621, it was deemed advisable to issue still more stringent edicts, and to compel the ale sellers to take out licences for their houses.

Modern beer, as is well known, is made essentially from malt and hops. Malt is barley which has been subjected to a process of partial germination. To attain this end, the grain is made to pass through four distinct operations, viz., steeping, couching, flooring, and kiln-drying, which are conducted essentially as follows. The barley is steeped in a vat of water for a period of time, varying from forty to seventy-two hours. This causes the grain to become more readily transformable, by the influence of the heat developed in the subsequent operations. The steeped grain is then

transferred to a couching or draining frame, by which it is deprived of its superfluous moisture. This object being generally attained in from twenty-four to twenty-six hours, the barley is then spread on floors, where its temperature soon becomes raised to about ten degrees above that of the surrounding atmosphere, when germination sets in. As soon as this has advanced sufficiently, the operation of kiln-drying is commenced, and is conducted with great care, the heat never being allowed to fall below ninety, nor to exceed one hundred degrees. Malt for porter differs in its preparation from that intended for other beers. Instead of being dried as already described, it is roasted like coffee, at a temperature of from 360° to 400° Fahr. As there are great temptations to use materials which have been spoiled, either by insufficient or excessive germination, porter malt is often of bad quality. When properly made, it should retain the shape of the grains, which should be separate, and not in clusters, while within it should be of a fine dark chocolate.

It will be interesting, before proceeding further, to examine briefly the cause of the change of barley into malt. Barley, in common with other seeds, consists of two essential parts: first, the embryo, in which many organs of the future plant exist in an undeveloped condition; and, secondly, of the cotyledons, which are the fleshy portions surrounding the embryo. When a seed is planted in the ground and begins to grow, the embryo developes both in an upward and downward direction, to form the stem and root respectively, while the cotyledon furnishes the food on which the young plant is nourished until the first leaves appear. Chemically speaking, the body of the seed consists chiefly of starch, together with small quantities of a nitrogenous substance called diastase. This matter has the power of altering the insoluble starch, under favourable circumstances, into dextrine and sugar, both of which being soluble, can then be readily assimilated by the infant plant. The conditions necessary to effect this change are (1) moisture, (2) heat, (3) oxygen, (4) darkness; and it will be observed that all these points are attained in the process of malt manufacture above described. The object of malting is at once to produce sugar, which serves for the formation of alcohol, and also to render the remaining constituents of the grain soluble in water. When the seed is planted in the ground or steeped in the vat and then spread on the floor, it absorbs moisture, becomes warmed, softens, and swells. The chemical change above-mentioned then sets in, carbonic acid gas is evolved, and this continues until the embryo is so well nourished that it bursts through

the integuments and takes root. It is evident that the object to be attained in malting is to stop the germination before the bursting of the seed, and this is done by the kiln-drying which destroys the vitality of the plant. Really well-made malt, however, requires the process to be arrested at a somewhat earlier stage, so that while the starch may be fully converted into dextrine, yet only a small part of the latter should be changed into sugar, otherwise the beer produced would have too much alcohol and too little "body."

Having thus looked into the manufacture of the malt, let us now say a few words on the second important constituent, viz., hops. The hop plant (*Humulus Lupulus*) was not originally indigenous, although it is now extensively cultivated in this country, as well as in France, Belgium, and Germany. It still grows wild in certain parts of Russia, notably in the Ural mountains, but like most prophets in their own country, its virtues do not seem to be much appreciated there. Hops are said to have been first imported into England about 1520, and their introduction seems to have been, as a matter of course, strongly opposed by the wiseacres of the period. Ten years subsequently we find their employment forbidden in beer made for the king's household, doubtless through scientific advice. In spite of edicts, however, the hop continued to increase in popularity until about 1610, when a determined stand was made against it. This was done by a no less wise and far-seeing body than the magnates of the City of London, who, in one petition, asked the Government at once to stop the use of hops and coals, on the ground that the former endangered the health and spoiled the drink of the citizens, whilst the latter produced a stench most abominable to their nostrils. The plant, however, had its supporters as well as its traducers, for somewhat later we find its use supported by Parkinson, as follows:—"The ale which our forefathers were accustomed only to drink being of a kind thicker than beere, is now almost quite left off to be made, the use of hoppes to be put therein altering the quality thereoff, to be much more healthful or rather physicall, to preserve the bodie from the repletion of grosse humour which the ale engendereth." The part of the hop used in brewing is the flower, or strobile, which contains as its active principles a volatile oil and a bitter called lupulin. The oil forms about two, and the lupulin eight per cent of the strobiles. Hops are also extremely rich in phosphoric acid, potash, and other mineral ingredients, and they therefore not only require a very rich soil, but exercise a most exhaustive effect on it, which has to be restored by heavy

manuring. It is therefore only in those counties in which the land is excellent, and the farming high, that the plant can be successfully cultivated. This fact was known very soon after its introduction, as we are told by an old author in 1597, that it "joyeth in a fat and fruitful ground where it prospereth the better by the use of doonge." In Tusser's "Five hundred points of good husbandry" we find the following effusion :—

"Choose soil for the hop of the rottenest mould,
Well-doonged and wrought as a garden-plot should;
Not far from the water (but not overfloune),
This lesson well noted, is meet to be knowne.
Meet plot for a hop-yard, once found as is told,
Make thereof account as of jewel of gold;
Now dig it and leave it, the suns for to burne,
And afterwards fence it, to serve for that turne."

When the hop harvest takes place (as during the present month) thousands of women and children—in fact whole families—leave home, and go in search of work in the hop fields, sleeping in the open air, in barns, or where they can, and earning, when dexterous and rapid in their plucking, a fair sum, which is too often spent in drink by the heads of the family before returning. The plants being of the climbing species are grown upon poles, which the labourers pull up, and having thrown them on the ground, the pickers set to work and dexterously remove the flowers, which are then carried to the kiln. This kiln is so constructed that the hops may be dried at a very low temperature, and at the same time exposed to sulphurous acid gas, which acts as an antiseptic and bleacher. After removal from the kiln they are packed into parcels called "pockets" by means of a hydraulic press, and are then ready for market.

Want of space compels us to stop here, but next month we shall briefly describe brewing and bottling beer and ale, the results of facilities for inspection kindly afforded to us by Mr. Baker, of Gray's Inn Road, the sole bottler and agent for Messrs. Whitbread and Co's productions.

J. Muter, Ph.D.

(to be continued.)

The diet of a dairy maid, or "dey," as she was called, in early English times, is graphically described by Chaucer :—

"No wine dranke she, neyther white nor red;
Her bord was served most with white and blacke milk and brown bred,
In which she found no lacke;
Seinde bacon and sometime an egg or twey;
For she was, as it were, a manor dey."

THE WINES OF AUSTRALIA.

Historical Note.—The founder of viticulture in Australia was an early colonist of New South Wales of the name of Busby. After having up to 1830 been much engaged in furthering vine-growing and the production of wine, and having distributed upwards of 20,000 vine-cuttings to fifty other settlers, he in 1831 undertook a journey to the vineyards of France and Spain, in order to ascertain to what peculiarities of climate, soil, or culture the most celebrated wine provinces were indebted for the excellence of their respective products, and to make a collection of all the vines that were cultivated in each. He obtained cuttings from the collection of vines in the Botanical Garden at Montpellier, counting 437 varieties. To these he subsequently added 137 from the Chaptal collection in the Jardin du Luxembourg at Paris; so that he had 570 kinds of cuttings at his disposal. Independently of these cuttings, he secured a considerable quantity of all the most valuable varieties of vines cultivated, either for wine or for fruit, in the best grape-growing districts of France and Spain. He took all that he could obtain, as he feared that the best varieties of France and Spain might prove (and he asserted in 1832 that several had already proved) of no value in New South Wales, while on the other hand indifferent kinds might produce in that climate valuable wines. He proposed to the then Principal Secretary of State for the Colonies that all these vines should be planted in an experimental garden at Sydney, to be established on vacant ground adjoining the Government Garden, and under the direction of its superintendent. The desired accommodation was immediately granted, and the vines were sent to Australia by convict ships. Some twenty varieties from Northern Burgundy and Champagne and the neighbourhood of Paris failed, but all the rest, about 550 in number, succeeded admirably. The names of those transported to Australia have been recorded by Busby in the journal of his travels.

Amongst other of the earliest vine-growers of Australia who deserve special notice are Mr. James MacArthur and Mr. Patrick Auld. It is said that most of the present wine-growers in these colonies are gentlemen of property, who are desirous rather of producing fine and creditable wines than of obtaining large or immediate profits.

Many, it is said, cultivate the art rather as an interesting scientific experiment, or with the view of making presents to their friends. The effect of this interest taken in the subject by a few respectable growers must be to establish the character of the wines, and to render their production permanent and remunerative.

Peculiarities of the Australian Climate.—The climate of South Australia is so warm that in most of its parts, which are not elevated too high above the level of the sea, frost and snow but rarely occur. In some of its most favoured districts the orange-tree grows in the open air, and is cultivated like the vine for profitable production. The vine therefore does not often fail for lack of the necessary quantity and maximum of temperature. But the drawbacks of the Australian climate are the severe droughts and heavy rains to which it is alternately subject, and which are as often destructive to the grapes as they are to other crops. The grapes begin to ripen about December, and then require some rain to attain their full development. Such rains the cultivators term vintage rains. When the rain falls upon the almost mature grapes early in February it is very detrimental; the grapes swell suddenly, burst and lose their juice, or they begin to rot, and are quickly destroyed. Thus, in February, 1860, the vintage on an estate called Camden Park was totally ruined. The first heavy rain completely spoiled the lower part of the vineyard by floods, a large portion of the grapes on the upper part of the vineyard burst, and the whole became rotten. In consequence, not a single gallon of wine was obtained. The effect of these rains upon the grapes is also well shown in the following report of the Hunter River Association:—

Densities of Australian must obtained at Dalwood, on the estate of the "Hunter River Vineyard Association," given in a speech by Mr. Wyndham, at the Annual Meeting of the Association, and reported in the "Maitland (Australian) Mercury" of May 6th, 1865.

The figures given are degrees of Balling's saccharometer, and would indicate sugar, if the must were a pure sugar solution. But we know that such is not the case; that there are always certain quantities of acids, salts, albuminous and extractive bodies, and gum present, the proportion of which, in different musts of the same specific gravity, may vary within such wide limits as are shown on Fehling's table. On an average about three may be deducted from each of the following figures as representing matters which are not sugar.

	Min.	Med.	Max.
1858. Very fine vintage	24	25-26	27
1859. Grapes damaged by caterpillars	22	—	27
1860. Before the rain	22	23	25
,, After the rain	19	—	—
1861. Very rainy	15	16	17
,, Later dry weather	18	—	20

		Min.	Med.	Max.
1862.	Favourable season	21	—	—
,,	Black verdot	—	24	—
,,	Best white grapes	—	24	—
1863.	Before the rain	23	24	32
,,	After the rain	18	19	20
1864.	Very rainy	15-18	19-20	21
1865.	Very rainy	22	—	26

Musts at the Bukkullá estate of the same Association.

1860.	.. ..	—	—	60
1863.	.. ..	38	—	40
1864.	.. ..	24	—	38
1865.	.. ..	38	41	45

Some of the last specimens must be either musts from raisins, or produced by the addition of sugar.

Viticulture in New South Wales.—Since 1855 the larger portion of Australian wine has been produced in the Hunter River districts. There is a society in active operation called the Hunter River Vineyard Association, and the latest reports given at their annual meeting were satisfactory.

The vintages of 1859 and 1860 were distributed over the four largest counties of the Hunter River district as follows :—

	1859. Gals.	1860. Gals.
Durham	10,925	34,374
Hunter	2,850	2,345
Northumberland	4,326	13,555
Gloucester	5,194	10,140
Total	23,295	60,414

Viticulture in South Australia.—In 1859 South Australia produced 38,396 gallons of wine. In 1860 the Registrar-General gave 96,155 gallons as the quantity produced in that year. The number of acres under cultivation in 1858-59 was 1,179; in 1859-60, 1,221. The above area includes the vineyards for growing eating grapes ; only 584 acres were cultivated for wine. The average yield of an acre of vineyard is thus shown to be 164 gallons.

From another source we have, however, received the following data, which differ from those of the Registrar just given :—

In the neighbourhood of Adelaide, the wine district produced as follows, viz. : in the year 1857, 1,056½ acres of vineyard yielded 100,624 gallons of wine ; in 1858, 1,626 acres gave 140,970 gallons; in 1859, 2,201 acres produced 180,324 gallons. In 1868 South Australia produced 900,000 gallons of wine. In this district are situated the Auldana vineyards, of which some very fine products are now sold in London.

Sale of the Wines.—The greater portion of the wine of South Australia is consumed in the neighbourhoods where it is grown. It is sold in the vineyards at from 2*s*. to 5*s*. per gallon, and is the almost exclusive beverage of the labouring people. The town populations, such as that of Maitland, do not appreciate or drink these wines. Sydney consumes some Camden wine, especially during hot weather. Shipments to the adjoining colony of Melbourne are carried out by the agency of the Australian Wine Company, which sold in 1860 more than 3,000 dozen of the Irrawang and Kaludah wines.

Viticulture in Victoria.—The colony of Victoria was separated from New South Wales in 1851. All returns concerning New South Wales dating before 1851, therefore, include Victoria, while all later ones must be considered to exclude it. It appears from the Statistical Register of Victoria, 1854, p. 363, and the Exhibition Catalogue, 1861, p. 59, that viticulture in that colony had progressed as follows:—

Year ending 31st March.	Acres.		PRODUCE. Wine, gals.		Brandy, gals.		Eating Grapes, cwt.
1849	108	..	6,306	..	100	..	—
1850	no return.	..	—	..	—	..	—
1851	161½	..	4,621	..	286	..	—
1852	173½	..	6,447	..	450	..	—
1853	107¾	..	4,500	..	500	..	—
1854 to 1858.	no return.	..	—	..	—	..	—
1859	547	..	7,740	..	—	..	—
1860	1,133	..	11,643	..	260	..	8,000
1867 to 1868.	—	..	400,000	..	—	..	—

At the Exhibition of Victoria in 1861, out of the different wines (total number not stated, but probably reaching 100), 5 were placed in the first class by the jurors, 26 received second-class certificates, and 26 others honourable mention. The maximum number to be given to the best wine was fixed by the jurors at 20, and no wine was placed which did not receive at least 5 marks. No description of characteristics, except the names and colours of the wines, and (in about half the number) the year of growth, are given. (Official Catalogue, 1861, p. 282.)

J. L. Thudichum, M.D.

[to be continued.]

NEW EDIBLES.

No. 3.—Leaves and Shoots.

In this paper we shall refer more to the produce of British plants than to those of foreign origin, and our aim will be chiefly to draw attention to the utilisation of those which abound on roadsides and waste places in English rural districts; and, as many of these have at some time or other been cooked and eaten, either experimentally or to satisfy the cravings of hunger, our remarks will seem to apply rather to a revival of old edibles than to the introduction of new ones. Few people who pass their days in towns have any idea of the utility of wild plants, and we fear that fewer still are thoroughly acquainted with the source or origin of most of our cultivated vegetables. Many of those which we now prize very highly, and which are recognised articles of food, are cultivated forms of wild plants which any of us may still see growing in their natural state in certain districts. The celery (*Apium graveolens*), and the sea kale (*Crambe maritima*), may be taken as examples, the first of which may be found in marshy places and ditches on different parts of the sea coast, and the second, also, a coast plant, grows wild amongst sand and shingle. The asparagus likewise grows wild in several places on the British coast. If the culture and development of these and many similar plants have been found not only successful but remunerative in a high degree, it seems to be a matter beyond dispute that others might be similarly changed by persevering efforts in cultivation. Be this as it may, it is a fact that there are many plants which grow in abundance in our hedges or on our roadsides which might be made available as culinary vegetables, and which have the great advantage that they can be obtained for the trouble of gathering.

The hop (*Humulus lupulus*), which is extensively cultivated for brewing purposes, is an example; in its wild state it grows in hedges and thickets, and in some districts is very abundant, so that the country people often collect the young shoots for use as a green vegetable. Hop tops, as they are called, are by no means an uncommon dish in some rural districts; indeed the young shoots, which are frequently removed from the cultivated

plants to enable the remaining ones to grow stronger, are often collected as food; they have been said to form a good substitute for asparagus; our own experience, however, teaches us that the latter is many times preferable, though hop tops when blanched, by covering them with earth, and when properly cooked, make a really good dish. A much better vegetable, however, is afforded by the young shoots of *ornithogalum pyrenaicum*, a plant belonging to the same natural family as the true asparagus, namely, the *Liliaceæ*, and growing in woods and copses in Somerset, Wilts, Gloucester, Bedford, and Sussex. In the neighbourhood of Bath these young shoots are regularly collected in spring, tied in bundles, and taken into the markets, where they are sold under the name of French asparagus; they are almost equal in flavour to asparagus proper, and are somewhat similar in appearance, with the exception that the individual shoots are much more slender, seldom or never exceeding the thickness of a cedar pencil; this is, no doubt, the principal drawback to their more general use, but under a system of cultivation the flavour might be improved and the size enlarged. The bulbs of another species, *O. umbellatum*, the Star of Bethlehem, are, when boiled, very nutritious and wholesome, and are eaten as food in Palestine. The onion (*Allium cepa*) is another well known representative of the same family to which the above belong, but the olive (*A. Schænoprasum*) is a comparatively rare plant in England, and is consequently but little known; the leaves, however, form an excellent addition to salads, and are used in France for flavouring soups. The black bryony (*Tamus communis*), the only British representative of the *Dioscoreaceæ*, the family to which the edible yams of the tropics belong, has tubers similar to the yam, but they are too acrid for use as food. The young shoots, however, after soaking in hot water, and then boiling them for some time, are said to taste like asparagus, and are used in Greece as a vegetable. One of the most neglected, and certainly one of the most common of our British plants, is the stinging nettle (*Urtica dioica*); three species are known in this country, but the one mentioned is perhaps the most common. Many country people believe in nettle-tea as a useful spring medicine, and not a few boil and eat them as a green vegetable; they were, in former times, grown in Scotland as a potherb, and if forced and blanched by earthing up in a similar manner to asparagus and sea kale, the young tops make a very good dish. In Belgium, Germany, and other parts of Continental Europe, nettles are much more generally used as food than they are with us.

The sea beet (*Beta maritima*) is a plant growing on many parts

of our coast. It belongs to the same natural family as the spinach, namely, the *Chenopodiaceæ*, and is probably the original form of the cultivated beet and mangold-wurzel. The leaves are large, and when boiled resemble spinach in flavour; the plant grows naturally on chalk, but is much improved by being grown in garden ground; and, if planted in rich soil, the leaves are finer, and the flavour is scarcely distinguishable from that of spinach. A regular supply can also be obtained until late in the season, by gathering the leaves in succession as they grow. In many parts of Ireland they are collected by the poor and eaten as food. Now that the cultivated beet is being grown in this country to some extent for sugar-making, it is well worth consideration whether the leaves might not be made a really useful and marketable green vegetable. Many other useful plants belong to the *Chenopodiaceæ*, and growing wild in Britain, have been used at different times for food. The Good King Henry (*Chenopodium Bonus Henricus*), for instance, was at one time very generally cultivated in gardens as a potherb, and is still, we believe, grown for this purpose in Lincolnshire under the name of "Mercury." It forms a wholesome green vegetable of the character of spinach, and the young shoots are said to make an excellent addition to soups, stews, etc.

While writing, my attention has been drawn to a note in the *Gardeners' Chronicle* on the value of the charlock (*Sinapis arvensis*) as a green vegetable. One correspondent says that he partook of it with roast veal, and that it came to table as a fine-coloured and most tender green, and he feels certain that numbers would prefer it from its appearance and flavour, and consider it a delicate vegetable if they were not aware of its origin. It is a most common plant, and if cultivated in gardens, there is no doubt it would be greatly improved.

The plants mentioned in this article are only a few out of the many British species that might be made available for culinary purposes—some as really marketable articles, and others for use in times of scarcity. Space will not admit of our referring in detail to any more than we have done; but we will conclude by simply mentioning the names of a few belonging to different natural families as indications that there is a wide field for experiments, and that our subject is far from being exhausted, viz., leaves of borage (*Borago officinalis*), young shoots of rampion (*Campanula Rapunculus*), young shoots of cow parsnip (*Heracleum Sphondylium*), dead nettle (*Lamium album*).

The natural order Compositæ, to which the Jerusalem artichoke (*Helianthus tubersous*), the common artichoke (*Cynara Scolymus*), and

the cardoon (*C. cardunculus*) belong, includes many other plants which ought to be used; for instance, the peeled stalks of the burdock (*Arctium Lappa*), leaves of chicory (*Cichorium Intybus*), blanched leaves of dandelion (*Taraxacum officinale*), young stalks of salsify (*Fragapogon porrifolium*), etc.

Cassareep is, we believe, an article not very frequently asked for in retail trade, yet, as the material for an excellent dish and as a good antiseptic, it should be more generally known in this country. We are told that it is the basis of most of our celebrated sauces, patented and not patented, and consequently large quantities of it must be brought into this country. It is the inspissated juice of the roots of the bitter cassava (*Manihot utilissima*, Pohl), and is expressed during the process of the manufacture of tapioca, though it is highly poisonous before boiling. After it has undergone that process it becomes a valuable and well-known material in the West Indies and British Guiana for flavouring soups, as well as in the preparation of a noted dish called pepper-pot, which is prepared in the following manner: The juice after being expressed from the roots is strained and boiled in an earthern vessel, the scum being carefully removed during boiling; by the time it is reduced to about half its original bulk and about the consistence of a syrup, it is seasoned according to fancy with salt and black and red pepper, and if the preparation is intended to be kept for any length of time, cinnamon, mace, and cloves are added; the higher the seasoning and the longer it is boiled, the more suited is it for keeping. It is said to be a most delicious preparation, and applicable to a great variety of purposes in domestic economy. A table spoonful mixed with a tureen of pea-soup imparts to it the richness and flavour of strong beef-soup. Meat boiled in cassareep can be kept for a much longer period than if preserved by any other process. And as an illustration of its preservative qualities it may be mentioned that some Dutch planters in British Guiana have, by means of the addition of a small quantity of cassareep from time to time to varieties of animal food, been enabled to keep in daily use the same pepper-pot for several years.

Cassareep can be obtained at some of the best Italian warehouses in London at about five shillings per quart bottle.

John R. Jackson, A.L.S.

ENGLISH GRAPE WINE.

The grape, both on account of its own great merits and of the universal glory of its juice, takes the same relative position among fruits that the rose does among flowers. It reigns pre-eminent, and its praises have been sung by poets from age to age, few being able to resist the charms of this omnipotent plant. Our own country is noted for producing some of the finest grapes in the world, and the fame of the giant vines at Hampton Court and Cumberland Lodge, Windsor, is great. On one occasion George III. was so pleased with a performance at Drury-lane Theatre that he gave orders for a hundred dozen bunches of grapes to be cut off from the Hampton Court vine, if so many could be found upon it, and sent to the actors. The gardener executed his commission, and informed his royal master that he could still cut off as many more without stripping the tree. The largest bunch of grapes ever grown in England was produced by the Duke of Portland's gardener at Welbeck, and weighed nineteen pounds and a half. Suspended to a pole, it was sent to a friend at a distance on the shoulders of two men, after the manner adopted by the Israelitish spies when they brought a bunch of grapes of Eshcol from the land of promise.

All these vines have, of course, been cultivated by artificial means, and with great care and attention, so that their grapes are necessarily far too valuable to be used for wine. Some writers, however, hold the opinion that good grapes for wine-making could be produced in this country in large quantities in the open air, and they have history to support them in this view. However strange it may appear to modern ears, there can be no doubt that England was once a wine-producing country. In the present state of commerce it is not likely that we could ever compete with foreign countries in the production of wine, but there is little doubt that grapes might be cultivated to a much greater extent than they now are. The difficulty with which a producer has to contend is not the want of sun, for that is hot enough while it lasts, but the comparative shortness of the summer. This, however, might be obviated by contrivance, for Mr. Clement Hoare tells us that the roots are usually

allowed to strike too deep into the ground, and he declares that "it is not too much to assert that the surface of the walls of every cottage of a medium size which is applicable to the training of vines, is capable of producing annually as many grapes as would be worth half the amount of its rental."

The vine appears to have been introduced into England after the invasion of the Romans, but we know that there were vineyards in the time of the Saxons, and that wine was made from them. Most of the vineyards were attached to monasteries, and the cause of the discontinuance of the cultivation of the grape may be traced as much to the Reformation and the abolition of monasteries as to the decline of the feudal system. William of Malmesbury speaks of a vineyard attached to his monastery, which was first planted at the beginning of the eleventh century by a Greek monk who settled there, and spent all his time in cultivating it. As might be expected, the vine was first cultivated in the south of England, but it was afterwards introduced into the north. Surrey was once famous for its champagne, and Sussex for its Burgundy. Wine was made for years by the Dukes of Norfolk at Arundel, and as lately as the year 1763 there were sixty pipes of home-made Burgundy in the cellars of that castle. Kent was long famous for its wine, and in the thirteenth century Canterbury was well supplied with vineyards. Haymo de Hethe, bishop of Rochester, sent Edward II. wine of his own growth, and in the city of Rochester a large piece of ground is still called The Vine. Philipot says that Captain Nicholas Toke cultivated and improved the English vine in Kent so much that the wine made from it equalled, if not outrivalled, that of France. This last statement we find it difficult to believe, and we fancy that English wine must always have been rather acid, unless artificial means were taken to correct it. Orazio Busino, who accompanied the Venetian Embassy to England in the reign of James I., was shown by Lord Exeter the vineyard at Burleigh, and when he tasted the grapes, and compared their forwardness with the time of year, he expressed his fear that they would never come to anything. The owner, however, told him that it was the family opinion that they would make excellent wine. This makes us think that the acid flavour was relished from use, but still it is possible that the wine was better than we imagine; and Dr. Plot, in his "Natural History of Staffordshire," praises it highly. He says—"The vine has been improved by the right worshipful Sir Henry Lyttleton to that advantage at Over-Arley, which is situate low and warm, being surrounded with hills, that he has made wine so good there that it has been altogether undistinguishable from

the best French wines by the most judicious palates. But this, I suppose, was done only in some favourable over-hot summer, though if the vines were placed advantageously, 'tis possible it might be done in an indifferent year; the reverend and learned Dr. Ralph Bathurst, president of Trinity College and Dean of Wells, having made as good claret here at Oxon, A.D. 1685, which was a very mean year for that purpose, as one could wish to drink. Which is so far from wonder, that we are informed they planted vineyards and made wines antiently over all the kingdom; for though Tacitus says it bore all sorts of fruits *præter oleam et vitem*, yet we find in Vobiscus that the Emperor Probus for some good service done permitted the Britons to plant their vineyards, which had been no great favour could they not have made wines."

In concluding, we do not think that the facts of the case warrant us in advising any attempt to make England again a wine-producing country, more especially as even when she made wine she was unable to supply herself without importing it largely from abroad. There can be little doubt, however, that we should be greatly advantaged by a more general system of growing grapes in the open air.

Henry B. Wheatley.

From an ancient charter we obtain a curious insight into the value of produce. It is provided by the tenure of the manor of Brisingham, in Norfolk, "that all commoners pay hens' eggs and day's work with their plough to the Lord of the Manor." The quit rents were paid by a small rental in money and by three roots of ginger, valued at 1*d.*, 95 hens at 7*s.* 2*d.*, 17 capons at 1½*d.* each, five ducks at 10*d.*, and 539 eggs at 3*d.* a hundred. The date of this document is in 1341, the 15th year of Edward III.

From the *Brewers' Journal*, we have some interesting facts on the consumption of beer in North America, which contained, in 1870, 2,863 breweries, turning out an aggregate quantity of 5,938,107 barrels. The average annual consumption of beer in the Union, was 78 glasses per head of the population, being at the rate of 248 glasses in New York, 99 in Massachussetts, 33 in Louisiana, and but 3 in Maine, the temperance state. On the other hand, it is said that the inhabitants of Maine are too much addicted to taking opium and brandy.

In our last number we noticed an ice making-machine constructed on Monsieur Léon Mignot's patent. Since then a company has been formed with a capital of 100,000*l.*, divided into 5,000 preference shares of 10*l.* each, and 5,000 ordinary shares of 10*l.* each, to purchase the rights of M. Mignot to this patent process, which is adapted to the making of ice, and for various refrigerating purposes. The company has for its object the development of the principle by granting exclusive licenses to work the patent in the East Indies, and in some of our other colonies where the climate necessitates the use of ice, as well as at home, while in the neighbourhood of London it proposes to erect the necessary plant and machinery for producing from 40 to 50 tons of clear ice per day. As the main features of the invention have been previously described, it is not necessary to further allude to them.

FOOD NOTES IN RUSSIAN TURKESTAN.

A Correspondent sends the annexed notes, extracted from the narrative of a Russian gentleman, M. Pashino, who resided at Tashkend, in an official capacity, during the latter part of 1866, the first year of the Russian occupation.

The chief articles of food amongst the native population of Russian Turkestan are mutton and rice. Large quantities of rice are grown on the low lands, and sheep-keeping is extensively followed for the sake of the wool as well as the meat.

In Tashkend, with a native population of 50,000 souls, and a Russian garrison of 500 men, in 1866, the bazaar price of mutton was 2 to 3½ kopecks (about 3 to 5 farthings) per pound, wild-goat's flesh fetched 5 kopecks per pound, a pair of fowls 15 kopecks, and a pheasant 20 kopecks. Bread was selling at 1½ to 2 kopecks, fresh eggs ten for 10 kopecks, sour milk 3 kopecks per measure. Koumis was always supplied by the Kirghiz servants to their masters as a gift. (In the above prices 10 kopecks may be reckoned as equivalent to threepence English).

The climate of Russian Turkestan varies greatly with the locality; but, generally speaking, it may be described as dry and exhaustive, and offering many obstacles to cultivation, to obviate which the natives have recourse to irrigation. Fruit and vegetables are grown in considerable quantities in the neighbourhood of the towns. Amongst these products may be mentioned grapes, apples, cherries, quinces, pomegranates, yellow-peaches, plums, and red and white mulberries. The fig ripens but slowly, and fig-trees are not very plentiful. The chief care is bestowed upon the grapes and peaches, which are exported in a *dried* state to Russia. The art of preserving is (or was) unknown to the natives. Sweet and water melons are grown of excellent quality, also cucumbers of several sorts, pumpkins, leeks, which are by no means good, carrots, light in colour and tasteless, peas, herbs, etc. Potatoes are not cultivated in the neighbourhood of Tashkend, but are brought in by the Tartars for sale.

Some parts of the country, at certain seasons, swarm with prodigious quantities of feathered game and water-fowl. Many of the streams are said to be well stocked with fish.

As in other parts of Central Asia, swine flesh was unknown, and European spirits, in those early days of the Russian occupation at least, were unprocurable in the bazaars.

MARKETS OF THE MONTH.

We have been enjoying real harvest weather, and have begun in many parts of the country to gather in the golden riches of the land, the abundance of which, however, is not more than an average. Still, the prices of the corn markets have tended in favour of purchasers, and flour is becoming cheaper. The prices of the meat markets remain actually in *statu quo*, though the papers now and then hold out faint hopes to the consumer, by stating that "prices were barely maintained," "had a downward tendency," and the like; delusive and fallacious words, however, they appear when practically tested at the butchers' shops, prices to retail purchasers ranging, if anything, higher; and it is to be deplored that the round sum of 1*s.* a lb. is becoming general. Pork, however, may be purchased for 8*d.* or 9*d.* per lb. When will our colonies answer to our cry: "Come over and help us with your superabundance?" Bacon is dear, prime meat 10*d.* per lb. Fresh butter ranges from 1*s.* to 1*s.* 6*d.* per lb., according to district and quality. The absence of heat and drought during the past months has been favourable to the growth of the grass. Apples will be very scarce and dear this year. Greengages will be found dearer this season than we have ever known them. All kinds of plums are only an average crop, and cherries have fetched the marvellous price of 1*s.* per lb., whole orchards not yielding a peck. Apricots will command an average price, about 1*s.* per dozen; peaches and nectarines will be dear; currants, strawberries, and raspberries have been dearer than for some years past, the crops being hardly an average. The potato crops look well, but as the disease is unfortunately appearing in some places, it has been suggested that when ripe, they should be instantly dug up. Potatoes are worth at present from 50*s.* to 80*s.* per ton. The poultry market presents little worthy of notice; chickens and ducks are now as cheap as they will be; turkey poults can now be purchased at a fancy price by the luxurious, as also leverets, from 3*s.* to 7*s.* 6*d.* each; ortolans, 3*s.* 6*d.*; grouse, however, have been particularly cheap at the commencement of the season—viz., only 2*s.* to 3*s.* each, owing to the abundance of birds. The accounts from the moors as to the shooting prospects generally have been favourable, though it is

feared that partridges and hares will be scarce. Fish has been plentiful and cheap. There is no doubt but that the establishment of the Columbia Market has had a very beneficial effect upon the trade, as during the year fish of all kinds, except salmon for the first few months, has been unusually plentiful. The latter, however, has been cheap of late, viz., 1*s*. per lb. P. L. H.

CORRESPONDENCE.

Sir,—In Mr. Hopkins's paper on "The Great Drinking Question" (*Food Journal*, pp. 264-7), he states that "the League and the Alliance are at daggers drawn. The League wants to put down drinking, the Alliance wants to stop excessive drinking; the League advocates total abstinence, the Alliance advocates temperance," etc. By the "League" I suppose is meant the National Temperance League, which has its head-quarters in London; but I would remark that the British Temperance League is a yet older institution, and that there are numerous associations throughout the three kingdoms which, under the name of Leagues, Unions, etc., are all based upon the same principle of total abstinence from intoxicating liquors. In distinction from these, but not in opposition—certainly nothing like Mr. Hopkins's "daggers drawn"—the United Kingdom Alliance confines itself to the legislative department of the question; and without passing any opinion upon drinking as an individual act, and by no means commending the use of intoxicating liquor as a beverage in any degree, the Alliance seeks to procure some legislative enactment enabling the inhabitants of legally-defined districts to stop the issue and re-issue of licences to sell intoxicating liquors, and, as a consequence, to make trial of the system prevalent in some thousands of parishes already, where, owing to the action of the local proprietors, no beer-houses or public-houses are allowed to exist. This policy does not prevent the opening of houses for the sale of non-alcoholic refreshments. Sir Wilfrid Lawson, as the principal representative of the Alliance in the House of Commons, has several times brought in a Bill, commonly called the Permissive Bill, to enable districts freely to decide whether they prefer the sale of intoxicating liquor or its absence, and to empower them to make trial of its absence if they so decide. Many non-abstainers are members of the Alliance—the late Lord Brougham was one of its Vice-Presidents for several years—because they believe that a question involving results charged with so much good or evil, ought to be left to the decision of those principally affected; and because the experiment thus carried out in various parts of the empire, would accumulate in time a body of very valuable facts, of peculiar service to the statesman, in indicating the course which legislation of a general kind might most wisely follow. The essential principle of the Permissive Bill is, the right of election on the part of parishes and other districts, whether the sale of alcoholic liquors shall be licensed and permitted therein or not. The common objection that the Alliance seeks to force its own prohibitory views upon an unwilling public, is thus seen to have no foundation in fact.—I am, sir, faithfully yours,

Dawson Burns.

DOMESTIC RECIPES

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

POITRINES DE MOUTON A LA SAUCE PIQUANTE.

Trim two breasts of mutton, tie them up with packthread, and put them to cook in a pan or in a good braise. When they are cooked enough take them from the bone and the skin, trim them afresh, season them with salt and pepper, cover them with bread crumbs, grill them, and serve with piquante sauce.

CELERI AU JUS.

Blanch the celery, then cook it in stock, thicken with flour and butter, simmer and serve. Slices of truffle added are an improvement.

BEIGNETS DE POMMES.

Cut in quarters some fine rennets, take away the core; pare them, and put them to marinade, with brandy, cinnamon, and essence of lemon. When about to fry them drain and plunge them in a light batter, fry them of a nice colour, and after having placed them on a dish, powder with white sugar, and glaze them in the oven or with a salamander. Serve very hot.

SOUP A LA HOLLANDAISE.

Peel three carrots and an equal number of turnips and cucumbers; scoop these out into the shape of small olives, and after blanching them, boil in two quarts of good strong blond of veal; when the vegetables are done, remove the soup from the fire, and mix in with it a leason of eight yolks of eggs, half a pint of cream, a pat of butter, and a little sugar; set the leason by stirring the soup over the fire, and then pour it into the soup tureen, containing about half a pint of young peas boiled green, and an equal proportion of French beans cut into diamonds.

SALT DUCK.

Rub well into an ordinary sized duck a quarter of a pound of salt, and turn the duck daily on a dish for three successive days. Then wash all the salt off clean, put it into a double with half a pint of water to the pound, and let it simmer steadily for two hours. Salt boiled duck, with white onion sauce, is much better than roast duck.

NOTES OF THE MONTH.

We are very pleased to see that the Training Institute in Domestic Economy, set on foot by Miss Faithfull, is in a fair way to be established early next year. An influential provisional committee has been formed, with the Earl of Shaftesbury at its head, for taking all the necessary preliminary measures; and although the undertaking is not yet placed before the public, the greatest interest has been manifested, together with offers of assistance from many quarters. We trust that we shall shortly be in a position to more authoritatively describe the details of the proposed Institute, which, if worked on the basis laid down, cannot fail to proposed be successful.

From the *Traveller* we have an account of a district in America which makes our mouths water. For scores of miles there was almost a continuous growth of wild strawberries, clustering on bushes three or four feet high, and reaching a size rarely attained by cultivation. So profuse was this native production of strawberries on what is called the Pembina Mountains, that the cartwheels, as they revolved, crushing the berries, were perfectly red with this wild vintage, and left long crimson trails behind them, as of blood.

Dr. Swartz, of Belgium, according to the *Chemical News*, has discovered a new form of adulteration for chicory, viz.: that of pulverised peat,—which he discovered by the aid of the microscope. Peat consists of remnants of decayed plants of a low growth, such as Sphagnum, Hypnum, etc., which yield on an average from 8 to 10 per cent. of ash—while chicory in its pure state does not yield more than from 4 to 6 per cent. We commend this new industrial undertaking to Irish speculators, who may make a good thing by selling the produce of their bogs to the chicory adulterators. We have arrived at the successive stages of Venetian red, brickdust and peat bog, and we shall be curious to know what the next and lowest form of adulteration will be.

In the Rev. S. Pryce's Report on the Schools of Mid-Wales, to the Committee of Council of Education for 1870-1, appears a paragraph full of useful suggestions. He says that the ignorance prevailing among the common people on the question of food and its preparation is very great. The prematurely aged appearance of many Welsh labourers may, in some measure, be attributed to the fact that their meals usually consist of only bread and butter or bread and cheese, with tea or coffee. The little meat that they buy is cooked in the most wasteful manner. If the elder girls were taught in schools how to make good and cheap soups, it is reasonable to conclude that such dishes would, in process of time, become common and popular amongst the labouring classes; the teaching would necessarily be to some extent theoretical, but it need not be entirely so. Economical soups and puddings, made on the school premises, might be sold at cost price to the many poor children who, living at some distance from the school, now bring their dinners with them—these dinners consisting of bread and butter or currant bread, with a small quantity of buttermilk, or more commonly, with a drink at the well.

The old License Laws.—It is a singular fact that in all old representations of the manners and customs of our forefathers, cups and drinking vessels are more plentiful than dishes. The early inhabitants of England no doubt were hard drinkers, especially after the occupation of the kingdom by the Danes, who brought some very bad habits with them. In fact, to such an extent did the drinking evil prevail that Dunstan, Archbishop of Canterbury, put down a number of ale-houses, and only allowed one to a town. He also ordered that pins or nails should be fastened into the drinking vessels at stated distances, and he who drank beyond these at a draught was liable to punishment. We offer the hint to the present Home Secretary.

We notice with pleasure that in the recent examination of female candidates for admission into the Training Colleges for School-mistresses, a useful paper is given on domestic economy. One of the questions runs as follows :—"Name six inexpensive and yet nutritious dinners for children attending an elementary school; state the cost, and the amount of materials required in the preparation of the same." Will any of our lady readers interested in schools take this question as though addressed to themselves, and give us the benefit of their knowledge? We might thus obtain a most useful series of hints for economical cooking.

Good News for Colonial Wine Drinkers.—The *Geelong Advertiser* says :—"Dr. Hope, of Batesford, has finished his vintage, but does not know exactly how much wine he has made. Of this, however, he is certain, that he has a thousand more gallons of hermitage than he had last year. This will afford pleasure to most colonial-wine drinkers, as Dr. Hope's hermitage has obtained for itself a name all over the colonies. Messrs. Hope Brothers have also made a much larger quantity of wine than last year, but how much we cannot say. They purchased new casks in due time, but at the last moment had to borrow more from their neighbours, the quantity of wine having exceeded their most sanguine expectations."

Dr. Moffat's paper read before the British Association at Edinburgh, last month, opens up a large and suggestive field. The subject was "The Geological Systems and Endemic Diseases;" and he showed that goitre and other endemic complaints were very common amongst dwellers on the Carboniferous system, whilst it was almost unknown on the Cheshire or the New Red Sandstone. As anæmia is a state in which there is a deficiency of oxide of iron in the blood, Dr. Moffat examined chemically the relative composition of wheat grown upon soils of Cheshire sandstone, carboniferous limestone, millstone grit, and a transition soil between the Cheshire and sandstone and other grit. He found that wheat sown upon the New Red Sandstone yielded the largest quantity of ash, and that it contained a much larger quantity of phosphoric acid and oxide of iron than that grown upon the other formations. It was shown, too, that wheat grown upon Carboniferous soil was deficient in phosphates and nutritive salts. The experiment was next tried of analysing 20 samples of bread used by as many different families living on the respective formations, and the results tallied completely with his previous observations. There was, in fact, a marked deficiency of the nutritive salts in the bread, owing, no doubt, to the removal of the bran from the flour with which the bread was made. The deductions that Dr. Moffat drew from these facts were, that persons of anæmic or strumous habit should, if possible, be transferred from a Carboniferous to a Red Sandstone soil, and should be dieted as far as possible with food which contained the maximum quantity of oxide of iron and phosphates or nutritive salts.

THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS.—Part XIV.

On Provisions and Markets.

The regulations for the internal management of the markets in New Orleans are very minutely framed and carefully acted upon. The rent for butchers' stalls (including the blocks) is at the rate of 75 cents per day; for fish, game, and vegetable stalls, 15 cents; for coffee and chocolate stands, 75 cents; and if the stalls are larger than the prescribed size, a charge of 5 cents per day is levied for each extra superficial foot, as well as an additional sum of 5 cents for each corner table. There is a charge of 90 cents for every head of horned cattle, and of 25 cents for every head of veal, mutton, or venison, it being understood that when the fore-quarter of veal shall weigh more than 40 lbs., the lessee of the revenues may levy 90 cents. upon the sale. For every head of pork weighing 100 lbs., or under, the tax is 25 cents; over 100 lbs., 50 cents.

All vendors of meat, vegetables, or other articles, are required to have their names and the number of the stalls legibly painted on a tin sign and hung up in a conspicuous place, and every infringement of this rule for more than three consecutive days is punishable by a fine of $10. From May to September the markets are open from dawn till 10 a.m., and during the winter months till noon. The half-hour which follows the closing of the markets is occupied by the butchers and others in sweeping and cleaning their stalls; when the bell finally rings, everybody is obliged to quit the premises, under pain of being fined $5. The lessee of the market has to keep an exact register of the persons to whom he lets the stalls, and anyone occupying a stall without a proper certificate from the lessee, or anybody who shall refuse to deliver up his stall on request, is fined $10.

Proper appliances are provided for the preparation and sale of fish, and anyone who makes use of other than these appliances is

fined at the rate of $5 per day for each stand. If meat or fish is placed on a stall in a blown, decayed, or unwholesome condition, it is immediately seized and thrown into the nuisance boat, and the offender is fined $50 for the first offence; and for the second, is deprived of the right of having a stall in the market.

No spirituous liquors are allowed to be sold in the market or its approaches, under a penalty of $50; neither are hawkers or pedlars allowed to come and sell their wares within the precincts under a fine of $10.

All carts and waggons which are in use for bringing supplies to the markets are considered to be under the inspection of the commissaries, who are very strict in arranging about the times at which the carts should arrive. After they have discharged their loads they are obliged to be removed, so that the adjacent streets should not be blocked up, and a tax of 25 cents is levied upon each waggon as it comes in. One or more of the commissaries is expected to be present daily during the time when the market is being held or cleared, and he has to pay a fine of $20 in case of absence, except from sickness.

All butchers who have salt or corned beef or pork for sale, are compelled to exhibit it on a clean, unpainted tray. Stands are allowed in the market for the sale of butter and cheese, but not for grocery; neither are oysters permitted to be sold under any conditions. Every vendor of an authorised article who shall obstruct the pathway with casks, boxes, or baskets for more than half-an-hour after the market is opened, is fined $5 for each offence. No fires are allowed, except in the shape of oil, spirit, or charcoal, for the purpose of heating coffee, tea, or chocolate, under a penalty of $5 for the first offence and $10 for every subsequent one. All refuse from the stalls has to be thrown by the several occupiers into barrels provided for the purpose, and these barrels are daily removed by a contractor; and anybody who throws garbage or refuse into the street or pathways of the market may be fined from $5 to $20, one-half of which goes to the informant (unless he be a police officer) and the other half to the city treasury.

No sausage meat is allowed to be manufactured in the markets under a penalty of $10 for each offence. This regulation appears to be scarcely as prudent as some of the foregoing ones, unless it was passed from motives of cleanliness. If, however, it were dictated from suspicions of purity of the article, it would seem that the sausage meat would not be likely to be prepared with doubtful material if made in the market, under the eyes of all beholders.

Having exhausted the very precise and excellent rules for the

regulation of the public markets in New Orleans, we will examine those which prevail in the city for the sale of special provisions—such as bread. All would-be bakers, and, indeed, everybody who is directly or indirectly engaged in the production of this important article of food, are obliged to report themselves at the mayor's office and enter their names and addresses, making at the same time a declaration of their intention to enter the baking profession. In default of attending to this regulation, they are liable to a fine of $25. All loaf-bread must be made of good and wholesome flour, and no bran is to be used less than "treble extra." Bakers are not allowed to expose for sale any loaves except of the value of 5, 10, or 20 cents respectively. Tavern keepers and eating-house proprietors are also compelled to have weights and scales, as fixed by law, for the purpose of weiging the loaves supplied by them, if required. It is the duty of the commissaries of the markets to occasionally visit all bakeries, shops where bread is sold, taverns, etc., and after declaring their official status, to examine the quality and weight of all the bread in the house. They have also the power to stop any cart or indeed any person who may be carrying loaves, and there and then examine the bread. If it is found to be not so good as the standard requires, it is seized, and the proprietor of the bakery or shop is summoned to appear before the Recorder of the city. The offender is fined from $25 to $50, and the bread is confiscated for the use of the Orphans' Asylum. We can scarcely understand the justice of this last regulation, for we should think that bread which was not good enough for the purchaser would scarcely be fit for the New Orleans orphans.

Every Saturday an assize of bread is published by the mayor in the official journal. He estimates a barrel of flour to produce 3,732 oz. of bread (American weight); and in order to ascertain the weight of the 5-cent loaf, the number of ounces are divided by a number equal to the number of 5 cents which a barrel may be worth in the market at the time of fixing the assize; then, by adding the 165 cents allowed to a baker by law, the quotient is the number of ounces that a 5-cent loaf should weigh. When any fractional parts remain over they are taken off the loaf, if not exceeding ½ oz.; but when over ½ oz., 1 oz. is to be added.

Finally, any baker mixing his bread with alum, vitriol, or any other unwholesome substance, is fined $100; and, in default of payment, is imprisoned for 30 days.

GERMAN WINES.

"Echter Wein ist echtes Oel auf der Lebens-Lampe," saith the German proverb, which being translated, means that genuine wine is genuine oil in the lamp of life. This is doubtless true, provided the beverage be real, but unfortunately, as already noticed when treating of port and sherry, the pure article is with difficulty procurable, and even when we get it, our palates, accustomed as they are to the doctored stuff, do not at first appreciate the natural wine. We have been led to investigate this subject by a perusal of an excellent little work on "The Moselle and Saar Wines," by Dr. Franz Meurer, Resident Government physician at Zell, and by being one of several persons interested in food questions, who were invited to visit the cellars of Mr. Verkrüzen, in Fell Street, City. There can be no doubt that the habit of beer drinking at an early dinner often tends to make men drowsy, heavy, and disinclined to a proper activity during the afternoon. In addition to this, the extensive use of malt liquor, coupled with sedentary pursuits, is an undoubted source of many renal disorders, and all these reasons may have led to the desertion of beer for sherry by many business men. It is not our province to enter into the question of "office alcoholism," lately so much talked of and written about, but to substitute a highly spirituous wine for the discarded "bitter," seems to be a remedy as bad as the disease. In the present state of our water supply, with cholera approaching, and fearful scientific bogies, such as "germs" and "living organisms," staring us in the face, it is no wonder that those who can afford it seek for some other beverage than that drawn from a limpid brook like the New River. Such a drink as is required should, to be perfect, fulfil the conditions of:—1, containing as little alcohol as possible; and 2, a proper proportion of an agreeable natural vegetable acid, together with the other important constituents of grape-juice. That these conditions are fulfilled by the natural wines of Germany to the utmost extent is an undoubted fact, and supported by the highest testimony. It is impossible in our space to enter into a full review of the work above mentioned, but it is sufficient to say that the author considers that wine to be good which is neither spirituous nor extremely acid, which does not rise to the head nor stagnate in the bowels, and

which promotes the due action of perspiration and other bodily functions. This he proves fully to be the case with the light wines of the Moselle and Saar, and in addition, gives details of his successful treatment of dropsy, rheumatism, and several skin affections by their daily use.

Although so suitable as a popular beverage, natural German wine has hitherto been practically unknown to us. It is true that many who have had their ideas expanded by travel, and those who have a sufficient length of purse, regularly use the higher qualities or "grand" wines, as the Germans call them; but the so-called "Hock" which is usually sold is the merest rubbish, artificially strengthened, and to which a fictitious bouquet is given by various ethers. The following were the wines brought to our notice:—

1. *Wiltinger*, a Saar wine, very light, with an agreeable bouquet and acidity, recommended by Dr. Meurer to the notice of the medical profession as a curative agent.

2. *Brauneberger*, a Moselle wine, with more body, and to be used as a fragrant dinner wine.

3. *Konigsbacher*, a Palatinate wine, light and refreshing, recommended for summer drink with soda or seltzer-water.

4. *Rudesheimer*, a Palatinate wine, quite suitable for after-dinner use.

5 and 6. *Deidesheimer Auslese* (1865) and *Hochheimer* (1865), both good specimens of high-class wines.

Four of these samples were submitted to analysis, with the following results:—

Name.	Price.	Alcohol.	Solids.	Fixed Acid (Tartaric.)	Volatile Acid (Vinegar.)	Ash.
Wiltinger	24*s.*	6·69	1·82	·59	slight	·137
Brauneberger	34*s.*	7·31	1·83	·55	trace	·117
Konigsbacher	17*s.* 6*d.*	6·84	2·0	·75	slight	·205
Rudesheimer (Forster)	34*s.*	9.86	—	·68	mere trace	—

An examination of the ash showed the proper constituents, and that all were sound and genuine grape wines.

Among the red wines of Germany we tasted—

1. *Ahrbleichert*, a red Ahr wine, of a rather peculiar nature. It could neither be called acid nor sweet, but had a remarkably agreeable astringency, which afterwards appeared in the analysis to be caused by a quantity of tannin, doubtless derived from the grape seeds.

2. *Oberingelheimer*, a red Rhine wine of excellent flavour and considerable body.

3. *Walporzheimer Berg Auslese*, a red Ahr wine, of full body,

which would evidently mature in bottle and become a good after-dinner beverage.

On analysis these wines showed—

No.	Price.	Alcohol.	Solids.	Fixed Acid.	Volatile Acid.	Ash.
1	20*s.*	8·22	3·27	·552	slight	·231
2	30*s.*	7·46	3·428	·512	trace	·239
3	40*s.*	10·45	2·24	·510	trace	·222

We are convinced that any enterprising publican, who would retail a glass of iced *Wiltinger* for threepence, would at once fill his house with customers, and make a profit of 50 per cent., which would surely satisfy him. We would mention that with each dozen Mr. Verkrüzen supplies a small bottle for the use of those who do not wish to consume a whole quart at once. Immediately after the large bottle is drawn the pint is filled *up to the very top*, and one of the new patent locking wine corks being inserted, the pint is put away on its side in a cool place, and is found, on opening, to be as fresh and perfect as if the bottle had never been drawn.

In conclusion we give a recipe for a "cup" called in Germany "Annanas Bowle." Take a pineapple (cut into slices a quarter of an inch thick) and three-quarters of a pound of powdered loaf sugar; lay the slices and sugar in alternate layers in a punch-bowl, taking care that the last layer is a thick one of sugar; cover the whole, and set it aside for twelve hours. Then add two bottles of *Wiltinger*, one bottle of *Oberingelheimer*, one pound of ice, and a small sprig of borage and woodruff. Let the whole stand for ten minutes, add a bottle of sparkling hock or champagne, and then just taste it! J. M.

Beet-root Sugar.—The *British Trade Journal* says that the number of manufactories engaged in the production of beet-root sugar is on the increase in central Europe. It appears that there are no less than 1,663, distributed as follows:—Great Britain and Italy have *one* each, Sweden 4, Holland 20, Belgium 135, Austria 228—136 of which are in Bohemia and 26 in Hungary—Germany has 310, of which Prussia possesses 230, the greater portion, namely 143, being in the province of Saxony. The South German States have fewer in proportion. Wurtemburg has 6, Bavaria 5, and Baden 1, which is, however, the largest perhaps in Germany or elsewhere, consuming annually a million cwt. of beet-root. Russia and France have about an equal number of these manufactories, namely, 481 and 483. The most of the sugar in France is made in the Department du Nord, which has 167 manufactories, or more than a third of the whole. At present this article is not produced in any of the following European countries: Spain, Portugal, Denmark, Greece, Turkey, or Roumania. In America it is still in the very first stages of development. It was unsuccessfully attempted for several years in the state of Illinois, but a manufactory has lately been set on foot in the state of Wisconsin.

HOTEL FARE IN THE UNITED STATES.

If America be not the country for living in, most unquestionably it is the country for "feeding" in. The Americans are not only great travellers—for they are almost always on the wing—but they are equally large eaters. Such a "proclivity" is materially enhanced by the hotels, which vie with each other in the variety and richness of their bills of fare. These are printed daily, and placed on the tables at breakfast, dinner, and supper; the mere sight of them is almost enough to satiate the appetite of an English guest.

Meals are served in large and lofty halls during fixed hours of the day, usually as follows: breakfast from 8 a.m. to 11; luncheon from 1 p.m. to 3; dinner from 6 to 8; tea from 8 to 9; and supper from 10 to 12. Thus ten hours per diem are devoted to eating. On my first visit to New York, and while at the Fifth Avenue Hotel, a free-and-easy Irish waiter remarked to me, "Faith, sir, you may sit down there from morning till night, and keep eating all the time, and there'll be nothing *extra* to pay!" There was a concealed joke behind this remark, as what are called "extras" serve to swell out the dimensions of a traveller's bill immensely.

But the elaborateness of the *menu* strikes a stranger sensibly. There probably will be many courses that he cannot understand, and others that he could not relish, even if he did. But this elaborateness is not alone confined to the dinner bill of fare; it characterises that of the breakfast and supper as well. I have seen a man with six dishes beside him at breakfast, and doing ample justice to each. Only imagine what gastronomic powers must be possessed to dispose of a couple of mutton chops, a steak, eggs, fried bacon, hot rolls, fried potatoes, oysters, toast and milk, tea, coffee, smoking-hot buck-wheat bread covered with treacle, or black syrup, and then to wash it all down with a glass of new milk or ice-water, the whole within the space of twenty minutes! One would naturally fancy that such a ponderous meal would suffice for the day's rations. But no such thing. In all probability the same individual would exhibit as

brisk an appetite on the other chief occasions when the tempting *carte* would be placed before him.

To say the least, the Americans do eat somewhat heartily, nor do they study æstheticism at the table. Even in the leading hotels one sees much that is more or less offensive to good taste; and unfortunately it not infrequently happens that the ladies in this respect are as much at fault as the sterner and rougher sex. But the rude breaches of refinement and good breeding to which I refer for the most part pass unobserved. Individuals are in too great a hurry to afford time to be squeamish on such a trifling matter as dining-room etiquette. A large class of Americans, indeed, eschew what we conventionally term "gentility," thinking the same beneath the attention, much less the study, of "a sovereign people." There is much, however, to be overlooked on this score. The majority of Transatlantic hotels, even of the highest character, are unlike those of this or any other European country. They have not, nor can they have, exclusively select guests. Hotels in America are open to all comers. The visitor, whoever he may be, has but to send on his baggage, drive up to the door, walk through the vestibule, enter his name in the guests' book, which is always available at the office for that specific purpose, get the number and the key of his room, and then feel superbly content and happy.

Notwithstanding the ample supply of food and even dainties served up in American hotels, it is still possible to fare meagrely or even badly, should one not have his wits about him. When a spacious breakfast-room or dining-hall is crowded with guests it is easy to get neglected, or to have one's orders unattended to, either wholly or in part. Generally on those occasions some confusion prevails; and notwithstanding that one waiter may be appointed to attend upon seven guests, it is not always that one can readily get what he desires. For so universal a complaint there is an infallible remedy,—a remedy which I myself have tried several times with remarkable success,—that is, a handsome largess to the waiter. The "tip" of a paper dollar or two will not avail much, for that class of humanity is mightily saucy and independent, and dislikes doing any service without a bribe. In fact, such people ordinarily expect the bribe for the service rendered, although they receive very ample wages, and get a plethora of victuals. Any guest who wishes to be comfortable, and have choice cuts from everything excellent, must hand the waiter at least a five dollar bill, and repeat the gift at intervals of two or three weeks should he tarry long in a hotel: he need then have no anxiety respecting the non-fulfilment of his wishes.

S. Phillips Day.

COOKERY PAPERS.

No. 5.

I THINK that the faults of our cookery which ought first to claim my attention are those which find their origin in the cook herself. At the head of such stands ignorance—ignorance of that elementary knowledge which is necessary to prepare substances for food, not elaborately and extravagantly, but in such a way as to render them palatable as well as wholesome. The cook should be aware that the leg of mutton badly cooked is positively indigestible; its nourishing properties are destroyed, its flavour eradicated. It would be almost as wholesome if it were eaten raw—and certainly as nourishing. The programme of most kitchens is a simple rule of mathematical precision, having no regard to the varying conditions of the nature of the substance operated upon, or the state of the temperature required to perform such operations successfully. The meat is to roast or to boil, or this or that thing is to "cook" for so long a period; never mind how it roasts, or how it boils, or how it cooks.

Whereas fast boiling should be avoided in cooking meat, and too fierce or too slow a fire will spoil the roast, it makes all the difference as to *how* anything is cooked. A clear equable fire is requisite for roasting; and if it should be found necessary to replenish it, it is essential that the process should be so managed as not to deaden it. There are other conditions, too, which must be taken into consideration, which I cannot however enter into here. Meat cooked *to a turn*, can be accomplished only by a certain amount of culinary knowledge, and by careful attention; it must be withdrawn from the fire at the critical moment when it is *done*, and experience is required to enable the cook to determine when this moment has arrived. The process which should be adopted for making soup, and that which should be employed for boiling meat, are diametrically opposed.

How many cooks are aware of this fact?—though it is principally in the other branches of the art that their education is so lamentably deficient. Ignorance will, without need of further demonstration, be allowed by all to be a cardinal failing in the cook. To our national credit it is due, however, that I should here state that, as *rotisseurs*, it is acknowledged that English cooks excel those

of all other nations. This superiority is perhaps due in a certain degree to the fact that most of our kitchen fires are open ones, whereas in other countries, as a rule, the fire used for culinary purposes does not give facilities for roasting. *Chaque pays, chaque coutume.* This open fire is not without its disadvantages in other respects.

Carelessness is another cardinal failing in the cook against which I would inveigh. The evil consequences of carelessness must be so self-evident that it is unnecessary further to allude to them than to say that it is, perhaps, more pernicious and lasting in its effects than any other failing which the cook may possess; for this reason—that whilst we only read the writings of the author, or admire the creations of the painter, we *eat* the works of the cook. Carelessness leads to dirty habits, and dirty habits are another too prevalent failing of the middle class *cordon bleu.* Too many cooks use habitually the same utensil for totally different purposes without cleaning it, or content themselves with only cleaning it imperfectly. The *batterie de cuisine* in many houses, as well as the kitchen arrangements, are too limited and inconsistent to allow of the excessive cleanliness so essential in the practice of cookery, without a supererogatory expenditure of considerable labour at inconvenient periods, and under adverse circumstances; therefore the cook is frequently lax in her conception of the incongruity of dirt. Stewpans and other utensils are put away dirty, cloths are used in a dirty state, pastry is made on dirty boards with dirty hands, and various other unclean enormities are practised; in fact, dirty ways are too often indulged in, until they grow into dirty habits. People who possess a cook at all inclined to laziness will discover that the failing is invariably accompanied by dirtiness. Each member of such a family will rapidly consume his regulation peck of dirt; and the quantity consumed by every person of the household during an average lifetime would have to be calculated by tons.

Illness may, I am sure, be often traced to the use of dirty utensils in the preparation of food; for it must be remembered that dirt is not always harmless, it is sometimes a rank and virulent poison. Especially is this danger apparent when copper stewpans are used. Cases are not wanting where death has been traced to this source. No utensil should be used more than once without being cleaned. Nothing should be put away dirty. Cleanliness if not in a cook *next* to godliness, is a necessary accompaniment to it. Dirt, the result of carelessness, may justify the suspicion that "there is death in the pot." Smoke is, I think, a *condiment*—

no better word suggests itself—with the nature of which almost every one is acquainted. It is nevertheless a "foreign substance," and no directions have ever been given for introducing it as a flavouring medium. Still it is unfortunately the predominating flavour of many dishes. I hardly know whether I ought to consider smoke a failing of the cook or the chimney, but perhaps a little of both. Proper care would reduce to a minimum the chance of its fragrance prevailing in any preparation of food. Proper care, I mean, not only in placing the stewpan on the fire and in superintending the culinary operation when there, but also in regulating and making up the fire when necessary, which, whilst anything is cooking, should be done with a discriminating intelligence verging upon the scientific.

The cook as a rule is very self-willed, if not downright obstinate and pigheaded. The word is not at all too strong for the occasion. Let her once obtain a situation as cook, or only cookmaid, even in the tiniest and least pretending household possible, and it is extremely difficult afterwards to induce her to believe that she has not arrived at the appogee of her condition, and that there is anything which it is worth her while to learn. This fact, I fear, must be set down to the score of ignorance. There are of course exceptions, but the general rule prevails that cooks are too self-opinionated and too self-reliant; and this is a failing most deeply seated in those cooks whose ignorance is most crass and most palpably evident.

I should say that the "good plain cook" would much sooner lose her situation than be compelled habitually to consult a treatise on the culinary art in order to retain it. She thinks that she knows better. False pride and self assertion are unfortunately prominent characteristics of her nature; which makes the task of a mistress who is willing and able to teach an ignorant cook a most difficult and unthankful one. But we shall generally find that the origin of this evil exists in the fact that cooks, who know little of their business, are but too well aware that, little as they know of cookery, their mistress, ten chances to one, will know still less. Therefore a feeling of superiority in this respect is implanted in the mind of the cook, based on an assumption which is not altogether groundless, and which even the skilled mistress will find very difficult to eradicate. It must be remembered that faults intrinsically little, that failings reprehensible only in others, become in a cook gigantic evils, monstrous enormities, culpable always, occasionally criminal.

Too frequently, however, the sober, respectable, honest, indus-

trious, and intelligent cook receives but small meed of praise at the hands of her employers. The mistress should not forget that the word of praise spoken in season is better than gold or silver. Encouragement is actually necessary to the development of the embryo cook. They are too frequently improvident, and it has been said that when too old to work they are permitted, half roasted and half stewed, to retire to some out of the way corner of the world to die in want and forlornness. But this picture is, I think, coloured somewhat too highly; and I would venture to remind the cook of a sensitive nature, who serves conscientiously an unappreciative mistress, that "Virtue is its own reward." Ignorance, carelessness, dirty habits, and self importance in the cook, are antagonistic to the development of good wholesome cookery.

Rapid cooking, grossness, extravagance, and monotony, are faults in the practice of cookery which are the result of our system. The cook should never forget that "hurry is the devil." Haste inevitably produces waste. The cook is too often, however, powerless to prevent this, especially when the mistress does not order the dinner until after breakfast, for dinner in most houses of the class which we are considering is an early one, and so a sufficient time is not allowed for the proper preparation of many kinds of food. Hence the cook is obliged to force on the process by the application of intensified heat; and to restrict the available variety of dishes within very circumscribed limits. More forethought than is usually bestowed upon the matter is necessary in ordering dinner. One can drive through an Act of Parliament, it is said, in a coach and four without damaging the Act, but one cannot drive through the theory of cookery in an express train without creating ruin, not only to the food itself, but also to the stomach which receives it.

Time, plenty of time, is required for the delicate preparation of food. Our *cuisine* is of too solid a nature, too substantial, too gross; highly flavoured condiments are too liberally used. Huge joints and heavy puddings are too much in vogue; each dish is of itself a *pièce de resistance;* whereas the appetite would be just as well satisfied and the palate better pleased, if the meal was composed of three or four less substantial dishes, distinctly different in their nature. Variety to an almost infinite extent might be obtained for the same expense which attends one huge dish.

We are rough riders as regards our *cuisine;* and the whip and spurs of cookery, pepper and onions, are too frequently called into requisition.

"There is in every cook's opinion
No savoury dish without an onion."

We vitiate our palate by the indulgence in food so highly flavoured and hotly seasoned as to destroy its appreciation for more delicate flavours. We are extravagant in our practice of cookery; I do not mean with regard to the expensive nature of our food, but extravagant in that we encourage waste. Huge joints are wasteful in the extreme; a really conscientious and careful cook, if allowed to exercise her discretion, would be able to maintain one or two people on the waste of many a middle class family. We do not, for instance, sufficiently understand the useful and nutritive properties of bones, which are too often thrown away, or reserved as perquisites by the cook to be sold to the rag and bone man. There is no excuse for the use of gravy beef in small houses. It is waste. Care and skill would extract excellent gravy from the many odds and ends and bones which are not otherwise utilised; and, together with fat, trimmings, etc., they might be made useful for various purposes. Every mistress should set her face rigidly against perquisites of any and every kind. Extra wages might be given as an equivalent, and so remove what is an incentive to picking and stealing. The cook must be encouraged to utilise everything. The yearly amount of waste in the houses of persons who can scarcely afford to live, would if calculated, appear astounding. This, I think, is due to the circumstance that the mistress is too often totally ignorant on the subject of cookery. She does not know what is actually required for this or that purpose; neither does she know what is useful, and what not; and therefore cannot check extravagance.

A Cook.

The Water Rice (*Zizania aquatica*) is abundant in Wisconsin, and other parts of North America, on the swampy margins of streams in shallow water. A gently flowing current, where the water is from 2 to 6 or 8 ft. deep, is the most favourable *habitat* for this plant, which forms an important article of food among the Indian tribes. They obtain it by paddling a canoe among the plants, when, with a hooked stick, they draw the stems over the canoe and beat off the grain. The harvest only lasts for a very few days, as when ripe the grain is shaken off by the slightest touch, and if the wind should blow hard for a day or two the rice is all lost. It is gathered both "in the milk" and after it is mature. The Indians take it to their camp and put it into pans, when it is roasted until the husk becomes dry and reddish; they then place it in sacks and pound it by striking on the outside, so as to separate the grain from the husk. It is winnowed, and is then ready for use. Those who have tried it prefer the Zizania to the ordinary rice o commerce.—*Gardeners' Chronicle.*

THE STAPLES OF CEYLON.

No. 1.—CINNAMON.—(Continued).

Such were the arguments used prior to the *fiat* from the Home Government, which was published in Ceylon on the 9th March, 1833. The sale of the cinnamon of the preserved gardens was transferred to Ceylon, and the Island upset prices were fixed at—

1st sort	.. ..	3*s.* 6*d.* per lb.
2nd ,,	.. ..	2*s.* 0*d.* ,,
3rd ,,	.. ..	0*s.* 9*d.* ,,

subject to the payment of an export duty of 3*s.* per lb., without distinction of quality. Just prior to the abolition of the monopoly, the quantity annually sold was at the rate of 600,000 lbs., the average rates at which it was sold in London, exclusive of the home duty, which had been reduced in 1829 from 2*s.* 6*d.* to 6*d.* per lb., being at that time at the Government sales—

For 1st sort	.. ..	7*s.* 6*d.* per lb.
,, 2nd ,,	.. ..	6*s.* 4*d.* ,,
,, 3rd ,,	.. ..	4*s.* 8*d.* ,,

The net annual revenue from cinnamon averaged 90,000*l.* The abolition of the monopoly led to increased efforts on the part of the growers on the Malabar Coast and in Java, to extend the cultivation of the spice; and it was found impossible, by the Ceylon Government, to maintain the high rates of export duty that had been first fixed, for, although the finest Ceylon cinnamon could not be equalled by the growers of the spice in other countries, the second and third qualities were successfully rivalled, and the duty was reduced, step by step, to a fixed rate of 4*d.* per lb., thence to a uniform 2½ per cent. duty with other exports, or 2*s.* a bale of 100 lbs. net; and, by the abolition of the Island export duties in 1870, it is now free. The quantity of cinnamon now exported from Ceylon is larger than it was under the monopoly. The annual export averages 800,000 lbs.; but the Ceylon Customs show a very reduced figure as compared with former years. Ceylon cinnamon has, however, lately somewhat improved in value in the London market, and early in this year—

1st sort sold for	..	..	..	..	..	..	3*s.* 3*d.*	per lb.
2nd ,, ,,	..	..	..	..	..	..	3*s.* 1*d.*	,,
3rd ,, ,,	..	..	..	..	..	..	2*s.* 9*d.*	,,

The late Sir R. Wilmot Horton, who was Governor of Ceylon when the trade was thrown open, and who was an advocate for the continuance of a modified monopoly, recorded his opinion, that should the time ever arrive when foreign countries could successfully compete, upon an extensive scale, with Ceylon in the growth of cinnamon, the only sound policy would be to do away altogether with the restrictive system, to allow individuals to produce and sell cinnamon as they would coffee, etc., at a remunerative price, to permit its export free of duty, and to trust that quantity at a low price, instead of quality at a high one, would so increase the wealth of individuals as to present, in that increased wealth, the means of carrying into effect some new system of taxation.

Sir R. W. Horton considered that until the restrictive system be absolutely done away with it ought to be maintained strictly; and that the fewer cinnamon plants upon the estates of private individuals the better, it being more beneficial to all parties that this spice, furnishing such an exemption from taxation to the population generally, should be both produced and exported under the direct management of the Government. The pecuniary aspect shows that under the monopoly a *direct* revenue of 90,000*l.* a-year was obtained by the annual sale of the spice by the Ceylon Government; under the existing system, the *direct* pecuniary return is nil.

The Government preserved cinnamon plantations have been sold, with the exception of a portion in the immediate vicinity of Colombo, which is retained, and small building-lots are sold by the local government, from time to time, as the requirements of the public demand. The preserved gardens purchased from Government by private individuals are, taken as a whole, in excellent condition.

There is little doubt but that Ceylon still produces the finest cinnamon, and that it is superior in flavour to both the Malabar and Java spice; but the increasing consumption of both the latter demonstrates that they can be substituted, with effect, for the finer bark of Ceylon.*

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* I observe that in a London paper of the 28th of August, under the head of Trade Prices Current, "Spurious Cinnamon" is quoted at 1½*d.* to 1¾*d.* per lb.—to be mixed, I suppose, with the genuine spice, and thus defraud the public. How much required is a legislative enactment to deal most severely with adulterations so injurious, in all respects, to the public, and so antagonistic to the interests of the fair and honest trader!

The land under cinnamon cultivation is about 15,000 acres The best cinnamon is thin, shining, and of a lightish yellow; it is slightly sweet, and has an aromatic flavour. It is cultivated by seeds, shoots, or layers, and old stumps are also transplanted; a quicker return is obtained by the last procedure, as shoots fit for peeling can be cut after they have been planted for eighteen months. The culture by seeds involves turning up about a foot square of ground at intervals of about six feet; the seeds (three or four) are then deposited, some ashes having been previously placed in the holes. The seeds germinate in about twenty-two days, but it is nearly seven years before shoots ready for peeling are produced. The seeds are also planted sometimes in nurseries, and the growing roots transplanted. The peeling commences about the end of April, and continues until the end of October. When a shoot is grown sufficiently large, the skilled labourer, or *Chalia*, as he is called, inserts a sharp instrument similar to a bill-hook, obliquely into it; the cut is then closely examined, to ascertain if the bark separates readily from the wood; if such be not the case, the shoot is left to be operated upon at some future time. The shoots that are cut are generally about three quarters of an inch in diameter, and four feet in length; they are then stripped of all their leaves, and two incisions, running lengthwise, are made in the bark, when, in the generality of cases, a considerable portion of the latter comes off in one piece. The bark is kept for about thirty hours, and fermentation, to some extent, is thus provoked; the external covering of the bark is removed with a crooked knife. In about ten hours after this has been done, the sections are put one into the other, and this is called piping; the pipes thus prepared are exposed to the influence of both air and sun for two or three days, and are then made up into bundles of about twenty-eight pounds each, warehoused and shipped. The plants are in flower in the month of January, and the seeds are ripe in July and August. The exudation from the berries, when boiled and allowed to become cold, furnishes a kind of wax, which the Kandyan grandees used to form into candles.

As is stated in "Annals of Philosophy," diversities in the quality of cinnamon do not appear to arise from any varieties of the plant, but from care and skill in the preparation, the soil and exposure of the country, the age and health of the plant. The very finest kind of cinnamon in Ceylon grows in soil the surface of which is white sand, under which is a bed of rich mould.

Some black pepper is generally packed among the bales of cinnamon when shipped, as it is thought to improve the flavour of

the spice. From the rejected cinnamon, and from cinnamon chips, cinnamon oil, both heavy and light, is extracted. It takes nearly 100 lbs. of cinnamon to produce six ounces of heavy oil, and three ounces of light oil. The best oil of cinnamon *sinks* in water, but when inferior, it is of smaller specific gravity. This oil is therefore expensive, and is used chiefly for medicinal purposes. From the bark of the roots of the cinnamon tree, camphor, by distillation, is produced.

The object of this paper is not to record private opinions, but to present as concise a *résumé* of the pseudo-cinnamon monopoly as the subject will allow of; and, as cinnamon once formed the most important item in the revenue of Ceylon, the writer, who was on the Staff (as private secretary) of Sir R. W. Horton, the Governor of Ceylon, thought that a trustworthy statement of the facts connected with its history would be of interest.

The other staples of the Colony will not require to be dealt with in such full detail. The case of cinnamon, being peculiar, called for a somewhat extended notice.

E. Rawdon Power.

From the *Brewers' Guardian* we learn that it is a popular delusion that the consumption of beer has been, and is, steadily on the increase. From the following figures, derived from Parliamentary Records and Excise returns, it will be conclusively seen that in proportion to the population the consumption was only one-half in 1867 what it was one hundred and seventeen years ago. The annual consumption of beer per head of the population in 1750 was 72 gallons, the duty on malt being 6¾*d.* per bushel. In 1867 the average annual consumption was exactly one-half, and the duty on malt was 2*s.* 8½*d.* per bushel. The annual consumption in Scotland in 1867 was 14 gallons, and in Ireland 7½ gallons. The annual average consumption of spirits is about the same as it was at the beginning of the present century, but it is estimated that five millions of gallons are produced by illicit distillation, almost entirely, of course, in Scotland and Ireland.

In these degenerate days we are happily spared a politeness of the good old times, which guarded against danger in all matters that related to eating and drinking. When a person was about to drink at a Saxon banquet, he asked the guest who sat next him to pledge him, which was performed by his neighbour holding up his knife or sword to protect him while he drank, it being supposed that a man when burying his face in a tankard was not able to guard against any act of treachery from behind. Perhaps, however, the difference is only one of degree, for, nowadays, the real danger lies not from a wound in your back, but from one internally—not from the traitorous enemy's knife, but from the adulterating publican's beer. Considering that the one danger was only occasional, and the other happens to tens of thousands every day, the Saxons had, perhaps, the advantage over us.

FEVER HOSPITALS.

Part II.

Having dwelt in a former paper on some of the advantages to be derived from fever hospitals, and having given reasons for hoping that such institutions might in time be established in every centre of population throughout the country, I propose in the following pages briefly to direct attention to a few preliminary questions which must inevitably arise and receive a solution, before any attempt can be made to provide special accommodation for infectious cases of disease.

In the first place it should be distinctly understood that the Sanitary Act of 1866, Section 37, allows the Sewer authority—that is, the Health authority—to provide for the use of the inhabitants within its district hospitals or temporary places for the reception of the sick; the sanitary authority *may* build or contract for the use of such hospital either alone or in combination with a neighbouring sanitary authority—*it may*, but an all but universal experience tells us that it will not. It remains, therefore, for those who see the ravages of infection and their natural remedy to take the initiative in this matter, trusting to the logic of facts and solid achievements, of lives preserved, of health improved, of money saved for that conversion of public opinion which nothing short of a plague or an earthquake seems adequate to effect. In approaching the question of accommodation for fever cases in any particular instance, much will of course depend upon the character of the population, the proportion of the wealthier to the poorer classes, the existence of manufactories or other large branches of industry; but for one and all there is a common groundwork which may be sketched out, a common need which demands attention without delay. Infection may be more deadly in the crowded and ill-built city, but it invades healthy and unhealthy alike, and finds some victims everywhere. Scarlatina, for instance, is no respecter of persons or of places; typhus often makes a swoop where least expected, as at Guildford in 1867; and the recent report of Dr. H. Stevens on the township of Malpas, in Cheshire, where in about five months one-tenth of the whole population was stricken with enteric disease, proves that typhoid is no exception to the rule.

As a first step, it is essential to lay down clearly the object and aims of a fever hospital; if we do this at once, and keep it always in view, there will be less difficulty in deciding some of the questions which will be afterwards found to arise. The *prevention of epidemics*, then, by the early separation of the sick from the healthy is the first, as the promotion of recovery by improved hygienic conditions is the second and only less important of the results to be looked for from special institutions devoted to the infectious classes of disease; and it follows almost as a corollary, that no measures could be considered complete which do not embrace the rich as well as the poor—one fundamental rule of such institutions should provide for the admission of *all classes*, without distinction, other than the terms on which they shall be permitted to enjoy the advantages held out to them. To domestic servants, to tradesmen, to persons of limited means, and not unfrequently to the wealthy, a well-ordered fever hospital would, in sickness, be a boon beyond price,—a valued resource in a time of painful anxiety and hasty resolves. To the poor in their crowded and busy homes it is even more, for it holds out an increased chance of recovery when attacked, and a possible escape from diseases which now sweep whole streets in their devastating course, leaving a track only too plainly marked by death, by hideous scars, or by a blight which endures through life.

With regard to the classes of disease to be admitted, I suppose there will be little difference of opinion. Small-pox stands alone in a class by itself; scarlatina and diphtheria will form a second natural group; fevers, including as subdivisions typhus, typhoid, relapsing and continued fevers generally, will form a third; and, lastly, cholera as a fourth and special division, to be dealt with from time to time as occasion requires.

Now, it will be plain to everyone that certain of these diseases cannot be admitted under a common roof. It would be madness, for instance, to subject the sufferer from scarlatina during convalescence to run the slightest risk of catching typhus or small-pox. There must, therefore, be subdivision, and the amount of this subdivision will rule to a large extent the form, size, and cost of the building to be erected.

Without entering on the subject of hospital construction, which will be found amply dealt with in the works of Captain Galton, Mr. Oppert, and Miss Nightingale, it may, I think, be concluded that the choice will lie, where land can be obtained for the purpose, between the pavilion and cottage plans. No other will afford that complete isolation which is essential in these cases. It is

true that, with extraordinary care and precautions, the risk of infection may, even under the most adverse circumstances, be reduced to a minimum. In the London Fever Hospital, for instance, where space is utilised to the utmost, and where the classification of patients has been carried out as far as possible under one roof, and where even this has been interfered with by temporary pressure and overcrowding—during the eight years, 1863-1870—there occurred but one hospital attack of typhus for every 276 cases of typhus admitted, and but one hospital attack of scarlatina for every 245 cases admitted; a result satisfactory, indeed, from one point of view, but a result which would be fatal to any provincial effort to provide special accommodation for infectious disease. One hospital-born case of fever or small-pox would be amply sufficient to alarm a community and empty the fever wards for an indefinite period. Isolation complete and effectual of the several groups of disease is a *sine quâ non*, an essential element of success.

The spread of small-pox in the London Fever Hospital to patients admitted with typhoid, scarlatina, etc., has conclusively shown that this disease, at least, should be isolated to the fullest possible extent.

With regard to the second group, including scarlatina and its congener, it will be advisable to arrange for the separate treatment under the same roof of diphtheria; and again, in the third group, the separation of typhus patients from others, such as typhoid and relapsing, under the same roof or by separate buildings, must be considered essential.

Three groups of pavilions or wards, therefore, for the three groups of disease, with such subdivisions as have been indicated, and an administration more or less common to all, would appear to be the minimum of accommodation required to meet the wants of a community. When we pass on to define still more closely the requirements in a given case, such as the form of building and number of beds, the difficulties can be compared only to the caprices of disease. No permanent provision that could be obtained would be adequate in times of epidemic; cases then occur in rapid succession, and would tax the resources of any hospital to the uttermost, were not provision, in each case, made for temporary extension (by wood, canvas, or iron erections) of the accommodation already existing.

The mere population of a town or district affords no trustworthy data for determining the amount of permanent provision which should be made; indeed, the death-rate from the various

classes of disease would appear the only guide—and that a poor one—which could be utilised for this purpose. It may be remarked, however, that the outbreaks of scarlatina, as being generally more sudden and seasonal, will require larger accommodation, in proportion to the numbers attacked, than would be considered proper for the various fevers which may be endemic throughout the year. Taking the mortality from scarlet fever roughly at 1 in every 12 cases of the disease, that from fevers at 1 in 20, and that from small-pox at 1 in 16,* the number of cases to be dealt with may be approximately deduced from the tables of the Registrar-General.

The next step would be to determine the number of beds which should be permanently provided for a given number of cases.

Taking the London Fever Hospital as a guide, it would appear that the daily average of cases is very nearly one-seventeenth of the annual total, whilst the largest number on any one day is about double the average number—say one-eighth.† It may be inferred, therefore, that the number of beds should be somewhere about one-eighth of the total number of patients which will have to be dealt with in each year; but it would probably be requisite to modify this calculation to a considerable extent according to the varying circumstances of population—their density, occupation, sex, and general sanitary status.

So much for the permanent accommodation, but it has been before observed that this could, in no case, be considered complete without ample provision for temporary enlargement in any required direction, even to the erection of separate sheds in epidemics of typhus or cholera.

A sudden outbreak of small-pox or typhus might set at nought all calculations and fill the wards in a week, and if cases are refused, the mischief is incalculable. Accommodation *must* be provided, and that at once, if the benefits of isolation are to be enjoyed. It should, in all cases, be possible to raise temporary buildings without a moment's delay; and provision should, wherever possible, be made for such a contingency in the original plan and allotment of the land.

I must say a word in conclusion on the private wards, which form no insignificant feature in a fever hospital, such as I have endeavoured to sketch out. Their number must vary in each separate case with the proportion of rich to poor, with the willingness or

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* These numbers, calculated on large averages, would be liable to excessive variation in different epidemics.

† 68th Report of the London Fever Hospital for the year ending Dec. 31, 1869.

hesitation on the part of those who can afford it to avail themselves of the accommodation; and this will probably, to a certain extent, become a matter of fashion or of opinion, to be determined by the example of one or two families, known and respected. There can be little doubt, however, that if adequate accommodation—plain, good, and clean—were provided, not only for the patient, but for a relative, friend, or home-nurse—for a mother, for instance, with her children in scarlatina—it would supply a want long felt in our modern life; and if some of the home comforts could be transferred under the watchful eye of the family medical attendant to the hospital-ward, some of the most formidable objections to a removal from home would be got rid of, and self-interest might in time be enlisted on the side of sanitary teaching, and work with it for the common good.

I have said little of cholera wards, for they would probably, in all cases, be temporary erections adapted to the requirements of the population and the severity of the epidemic.

Lastly, convalescent wards are, of course, highly desirable if not essential, especially in the case of scarlatina, where recovery is tedious and exposure to cold attended with imminent risk. Convenience and economy might, perhaps, both be consulted by placing them on a floor above that devoted to earlier stages of the same disease.

With regard to management, both internal and external, many questions arise of vital importance to the success of a fever hospital. The regulation of medical attendance, the supply of nurses, the terms of admission, and mode of support, are but a few of the subjects which may well be left for a separate notice; and I hope to take them up in a future number of the *Journal*. Meanwhile, I would ask any of my readers who have influence in provincial towns to consider well the advantages which a fever hospital might confer on the community; and if anything that has been said has carried conviction, to see if they cannot themselves turn the first sod, and help to lay the foundations of a noble and life-giving institution.

E. T. Wilson.

A New York journal tells us that a firm in that city has been manufacturing bitters, which they stated contained neither alcohol nor wine. A sample of the "bitters" was analysed, and found to contain ten and nine-tenths per cent. of alcohol, and nineteen per cent. of sherry wine.

POPULAR FOOD ANALYSIS.

No. 13.—Beer—Concluded.

In continuance of our subject we now glance at the process of brewing. It may be classed into eight separate operations, namely, firstly, *grinding the malt;* secondly, *mashing;* thirdly, *boiling;* fourthly, *cooling;* fifthly, *fermenting;* sixthly, *cleansing;* seventhly, *racking off;* and finally, *clearing.* In describing these processes we cannot do better than adopt a detailed account of them as given in the "*Licensed Victuallers Guardian*," in 1867.

The malt, when ground, is deposited in a large vessel called a "malt-case," which is situated over a much larger one called the "mash tun." The malt-case is merely a receptacle to hold sufficient malt for one mashing, until such time as that process is to be conducted; and, when this time arrives, valves are opened in the bottom of the malt-case, whereby the malt falls speedily into the mash-tun. This last mentioned vessel is circular, and is provided with a double bottom, the upper surface of which is pierced with many small holes. The space between the two bottoms is placed in communication with the copper, by means of a pipe, and a few larger holes, closed with plugs or caps, occur in the lower or true bottom.

This being the arrangement, and the mash-tun being supplied with malt, a proper quantity of water is allowed to flow from a large copper to the space between the two bottoms of the tun, and percolating upwards through the small holes, it mixes with the malt. The malt and the water are then stirred about by means of a mashing-machine set in motion by a steam-engine; and, after this has continued for a certain length of time, the water which now contains a large portion of malt extract, is allowed to flow from the tun into a square vessel beneath, called an "under-back," the taps in the bottom being turned on for this purpose, and the holes in the false bottom being too small to allow any of the malt to pass. The liquor thus produced is called "wort."

A pump is then used to pump the wort into the copper, where it is to be boiled with the hops. These latter are conveyed in bags to the brew-house, thence to the upper part of the copper, and thrown in at a door in the copper called the "man-hole" (this being the hole at which the men go in to clean the copper after each brewing). The wort and the hops are then boiled together until the flavour of the latter is sufficiently imparted to the former, the hops being constantly stirred by a rotatory machine called a "rouser." When the boiling is complete, the whole contents of the copper are turned into the hop-back or jack-back, which is a vessel, having a false bottom for large brewings, and a sieve partition at the corners for small ones.

As the boiled worts drain from the hops, they are allowed to run into, or are pumped into, the coolers. These hops, when sufficiently drained, may be again boiled with a second copper of wort, or with the return-wort or table-beer. The coolers are large shallow vessels, placed in as open a part of the brewery as possible, so as to command a free current of air over the whole of their surface. They may be constructed either of iron or wood. The latter possesses many advantages from its cleanliness, and the exposure of a large radiating surface to assist the cooling. Fans and blowers are sometimes used to assist the rapidity of this part of the process. The fans are placed in the middle of the cooler, and whirl round, producing a considerable movement and current. The blower con-

sists of a light iron paddle-wheel, working within a wheel closed at all parts, except round the axle of the wheel, at which the cool air enters, and at the opening of the wooden pipe, thorough which it is expelled. When sufficiently cool, the worts are allowed to run into the fermenting tun. As great injury may arise from the worts remaining too long in the coolers, more particularly in summer, it becomes necessary to employ artificial means of cooling by refrigerators, the principle of which is this: A current of cold water flows through a main in one direction, while the hot wort is made to traverse in the opposite, either in an inclosed pipe within the liquor main, or around the exterior of the cooling surface.

The next operation, that of fermentation, in carried on in a vessel called a gyle, or fermenting tun, which is either of a square or round shape—the latter being preferable, on account of the superior cleanliness. As soon as the worts begin to run from the coolers, and when a sufficient quantity is in the tun, the yeast is added, being first rendered thin by some of the wort, so as to be easily mixable when thrown into the remainder. When the fermentation has arrived at a certain point of attenuation, that is, when a certain quantity of the saccharine matter of the wort has been converted into alcohol or spirit, it has to be cleansed from the yeast; and for this purpose it is either run into smaller vessels, such as casks or rounds, or the yeasty head is skimmed off from the top; and this is repeated at intervals until the beer is clear.

The operation of skimming is generally confined to the cleansing of ales. The rounds or casks are simply filled with the fermenting beer, and so arranged as to be always kept quite full, with a trough or stillion to catch the yeast as it works out at the orifice of these vessels. Great care is taken to keep these casks clean. The beer, being thus cleansed from all the yeast, is now to be either racked directly into casks for ale, or run into vats prepared for it. In extensive breweries, a large vessel termed a tank is first used, into which the beer intended to be vatted is allowed to run so as to be perfectly well mixed, and also to deposit a further portion of yeast by standing. The beer is by this means also rendered flat, which is necessary for stock or store beer that has to be kept some time before coming into use.

The last operation that the beer has to undergo is the fining, or clearing, which is sometimes done by the brewer, sometimes by the publican. The finingmaterial consists of isinglass of various qualities, digested and dissolved in acid beer or sours.

The main thing to be observed in all the operations described is cleanliness, without which it is impossible that sound beer can be brewed, let the skill of the brewer be ever so great.

To afford our readers some idea of the immense scale on which the storage of beer is carried on, we give an extract from the same authority that we have already quoted. It is part of the description of a visit to the great brewery of Messrs. Whitbread, of Chiswell Street, London, the great antiquity of whose business is well known.

It is on the north side of this monster establishment, that the "middle cellar" is situated, and here the visitor beholds a series of vats, the largest of which contains 3,176 barrels, and the average capacity of each vat is equal to 2,400 barrels. The general dimensions are as follows:—each vat is 37 feet high, and the girth of the largest is, at its widest part, 35 feet. The massive stone pillars upon which these several vats rest are 20 feet in height, and have a foundation of 7 feet in depth, resting upon a granite base. Here we have ranges of buildings branching out north, south, east, and west, and which are crammed as full of vats as the

circular form of the vessels will permit—some larger than others, but all of such dimensions as to baffle one's common notions of "great" and "small." Sometimes, walking on the eastern floor, we pass immediately under the ranges of vats (for none of them rest on the ground), and might then be said to have a stratum of beer 20 or 30 feet in thickness, over our heads; at another, we walk on a platform level with the bottom of the vats; or, by ascending steep ladders, we mount to the top, and obtain a kind of bird's-eye view of these mighty monsters. The town of Heidelberg, in Germany, has gained a sort of celebrity for possessing a tun of vast dimensions, capable of holding 700 hogsheads of wine; but there are several of the vats here mentioned, in each of which the Heidelberg tun would have ample room and verge enough to swim about. The appearance of the vats in the middle cellar has a most imposing effect upon the visitor, as may well be supposed from this description.

In every large brewery there is always kept on hand a vast number of butts and barrels. These are brought empty from the cellars of the publicans, to be repaired and cleansed before being again used. One of the most undeviating rules in these establishments, as we have already noticed, and which is carried out with great strictness and care, is to observe the greatest cleanliness in every part of the process. Nearly every vessel, large and small, however frequently it may be emptied and filled, and in whatever part of the operations it may be employed, is cleansed after each time of using; according to the nature or condition of the liquid contained in the vessel, so is there a particular mode of cleansing adopted. The butts in which beer is conveyed from the establishment are especially attended to in this respect. The cleansing or steaming house, in which this process is conducted, is admirably constructed to carry out this process in a most efficient manner. The butts or barrels to be cleansed are ranged, a certain number at a time, round the sides of a building, immediately over a horizontal pipe containing steam from an adjacent boiler; and from this pipe a number of jets or short pipes branch upwards, and pass into the bung-holes of the casks, one to each cask. These casks are not only cleansed after every time of using, but they are also inspected and measured; and if any leakages or injuries appear, the means of repair are at hand; for, where the cleansing is effected, there is the cooperage, where may be seen casks old and new, iron hoops that had seen hard service, and others destined to replace them; staves of various shapes and sizes, and all the tools and working apparatus necessary for a cooperage on a large scale. The new cooperage, which presents all the features just noticed, is capable of affording accommodation for twenty-one coopers, who are constantly employed in the duties incidental to their business.

The operations of brewing are continued by night as well as by day. The coppers are almost uninterruptedly in use, and relays of workmen succeed each other to attend them. But not only within the brewhouse is activity displayed betimes in the morning; in the open court, long before sleepy London has roused its head, the draymen are busy in hauling up the butts of beer and placing them on the drays, in order to their being taken to the several customers for whom they are intended.

One more question still remains to be considered, namely, the bottling of beer. It is the usual rule for popular brewers to issue to bottlers so many labels with each cask of beer, and the bottler puts the liquor up in the reputed "quarts" and "pints" as he calls them, sticks on a label, and the beer is thus guaranteed genuine. By this process of doing business the public is compelled to put up with

short measure, and has no guarantee, except the good faith of the bottler, that the beer is not tampered with in his hands. We believe that before long the eyes of our large firms will be opened to the necessity of a reform in this matter, and, meantime, the firm already mentioned have become pioneers of a new system. They have acquired immense premises in Gray's Inn Road, and appointed one gentleman (Mr. Baker) as their sole bottler. He, is we understand, bound—first, to bottle the beer as it comes from the brewery, and secondly, to use nothing but imperial measure; and his premises are always under the firm's inspection. If this system were followed by other houses, we should hear less of the wretched stuff retailed in many places under the labels of popular brewers.

We now proceed to the results of our analyses. So much has been said and written about adulteration of beer, that we, doubtless in common with most of our readers, looked upon the publican as the great arch-adulterator, whose whole time was spent in poisoning his votaries, and we confidently expected to have some terrible revelations to make. But it is not really so, because we have not been able to find any single injurious adulteration. That some of the smaller brewers use *tobacco*, *cocculus indicus*, etc., has been only lately made clear by the reports of the chemists of the Excise, but that the practice is not so wide spread as imagined is quite apparent. The only thing which we have found that should not be there is water, sugar, and in some cases salt. The following are the results:

I.—PORTER.

No.	Price per Quart.	Specific Gravity.	Alcohol.	Solid Extract.	Grains of Salt per Gal.	Other Adulterations.
1	3d.	1·014	2·6	4·3	30·1	none.
2	,,	1·014	2·7	5·0	42·5	,,
3	,,	1·015	3·4	5·4	63·0	,,
4	,,	1·017	2·5	5·7	43·1	,,
5	,,	1·019	2·9	6·3	30·8	,,
6	,,	1·015	3·2	5·4	30·1	,,
7	,,	1·017	3·0	6·4	23·8	,,
8	,,	1·010	2·8	4·2	48·8	,,
9	,,	1·016	2·8	5·1	30·1	,,
10	,,	1·021	2·3	6·2	35·7	,,

II.—STOUT.

1	8d.	1·021	6·1	7·5	18·1	none.
2	8d.	1·025	6·6	8·8	19·0	,,
3	6d.	1·025	5·5	9·2	42·0	,,
4	,,	1·020	4·3	9·1	39·0	,,
5	,,	1·015	4·5	6·3	40·5	,,
6	,,	1·020	5·8	7·1	20·3	,,
7	,,	1·015	3·3	4·5	18·2	,,
8	,,	1·014	4·7	5·7	30·5	,,
9	,,	1·020	2·5	5·9	22·1	,,
10	,,	1·015	2·3	5·8	42·5	,,

III.—BITTER ALE.

No.	Price per Quart.	Specific Gravity.	Alcohol.	Solid Extract.	Grains of Salt per Gal.	Other Adulterations.
1	8d.	1·011	3·7	5·05	18·9	none.
2	,,	1·011	4·4	5·10	27·3	,,
3	,,	1·020	3·6	5·9	30·8	,,
4	,,	1·013	3·5	5·7	22·4	,,
5	,,	1·012	3·7	5·5	10·6	,,
6	,,	1·014	4·2	5·5	14·4	,,
7	,,	1·013	4·2	5·5	21·4	,,
8	,,	1·012	5·0	5·2	14·8	,,
9	,,	1·004	4·6	3·5	14·3	,,
10	,,	1·013	3·5	5·7	22·4	,,

IV.—OLD ALE.

1	8d.	1·009	5·3	5·0	18·9	none.
2	,,	1·012	5·3	5·8	39·4	,,
3	,,	1·021	3·6	5·9	30·8	,,
4	,,	1·010	5·6	5·4	63·0	,,
5	,,	1·012	5·6	6·1	33·0	,,
6	,,	1·011	5·0	5·5	14·3	,,
7	,,	1·020	6·4	7·9	14·8	,,
8	,,	1·016	7·3	7·1	14·3	,,
9	,,	1·009	6·0	5·2	22·0	,,
10	,,	1·020	6·2	7·3	20·0	,,

These results speak for themselves, and require no comment. The Porter is in most cases watered, salted, and the body restored by "foots" sugar. The Stout is in some samples simply undiluted porter, and in others it is treated as above. The two honourable exceptions were purchased in a good district in the South of London. The Bitter Ale seems to be the least tampered-with article of all, as the whole of the results were very uniform; while the Old Ale is not by any means the terribly potent fluid which people imagine it to be. While, therefore, it is evident that the publican knows the use of "liquor" as well as the milkman does that of "Simpson," we shall never more believe in the awful and occult mysteries of the cellar, and when we hear any of our friends complain of a violent head-ache "brought on by that terribly bad stuff, you know," we shall privately put the malady down to quantity rather than quality.

J. Muter, Ph.D.

From the commercial returns of the Province of Venice, sent over by Consul-General Perry, it appears that a very important industry in fish is carried on. In addition to the large quantities caught at sea and in the lagunes, an extent of about 2,800 hectares, or 70,000 English acres, is occupied by the fishponds or "valli," in which the most esteemed species are cultivated. These *valli* are very productive, and a large daily trade has been established between Venice, Milan, and even with Austria and Germany.

CHEAP DISHES.

Introductory.

When the cynic coupled "cheap and nasty" together he gave prejudice and weakness a ready phrase of sarcasm which has done a vast amount of harm. The cheap press suffered under this stigma until Parliament sanctified the penny sheet by relieving it of taxation. In the matter of food, cheap may often be taken as synonymous with nasty; but the exceptions to this are various and many. It shall be my business to show the readers of the *Food Journal* that some of the cheapest dishes are the nicest, and that good, wholesome, and pleasant food is not necessarily the dearest. A French family could live sumptuously on the scraps which are thrown away in an English kitchen. I am speaking now of middle-class families and middle-class tables. It is true that some of my well-to-do middle-class friends would say in reply, that they could not live on the slops and stews which satisfy French families. There is a great deal of truth in this view of the case, and I do not for a moment intend to lay before my readers a collection of French dishes. I love everything English, and regard good English cooking as the best in the world. The viands on an English nobleman's table are not to be equalled in quality nor in appetising display by any other country under the sun. I have heard this acknowledged by professional gourmands who had Brillat-Savarin's maxims at their fingers' ends. There is no reason why the English middle classes, being as a rule in possession of good incomes, and expending, as they do, large sums in their kitchens, should not for half their present outlay have double their present enjoyment, and at the same time receive a much larger share of physical benefit from their food than they have hitherto done. An appetite for the pleasures of the table being generally regarded as an expensive companion, I hope to furnish examples of piquant, tasty, epicurean, delightful dishes, which cost no more than heavy, soddened, dull, stupid compounds. If I had been a rich man I might have devoted myself to Lucullusian studies, involving nightingales' brains and the tongues of birds which had been taught to speak. I am not a rich man, and necessity has obliged me, while desiring the pleasures of *la gourmandise*, to

consider the expense. Every dish I describe has been tested and eaten at my own table, and in many cases I shall give you the cost of the ingredients.

I.—A Side Dish, or for Supper.

As I intend these papers for the middle classes, for bachelors, and for poor people, it will not be through any feeling of egotism on my part, nor must it be taken as any reflection upon the wisdom of my readers, if I explain many things which are known to nearly everybody. There may be some of my friends who live in such simplicity as to be unacquainted with the meaning of a side dish. Let me tell these readers that a side dish may be regarded as in contradistinction to a joint. In a set or ordinary dinner, it is eaten between the joints or heavier dishes. After soup and fish come the *entrées*, or side dishes, which are generally stews, grills, or curries. This class of dish is often a capital thing for breakfast, luncheon, or supper. I will now give a nice and cheap addition to the side dishes. Sufficient pigs' brains may be bought for 6*d.* to make a handsome and excellent dish. In the pork butchers' shops of the Midland counties, for instance, they may be bought for a few pence. They make a delicious dish, and more particularly for supper; they are as light and wholesome as sweetbread, and more delicate in flavour. Remove the thin outer skin and well wash the brains. Place them in a dripping tin, or in a common saucer, with butter or dripping (butter is best); pepper and salt, according to taste, and cook them in the oven. See that there is sufficient fat or butter partially to cover the brains when simmering. Cook until done, and if the oven does not brown the surface, brown it before the fire. When you are tired of this dish, cooked in this simple form, sprinkle a little fresh parsley among the butter, or serve up on buttered toast. Some persons to whom I have mentioned this dish profess not to like the idea of eating pigs' brains, though they glory in sucking-pig with brain sauce, invariably made from the coarse brain of the ox. I promise my readers, from much experience, that pigs' brains are delicate, wholesome, and delicious.

II.—A Sauce for Boiled Calves' Head.

I have eaten this in France, and tried it with cheaper dishes than calves' head. It goes well, for example, with pigs' cheek. Cut up two large English onions (or half a Spanish onion) into small pieces, smaller than is generally used for seasoning to a duck; sprinkle with the onion a little fresh parsley, place it in a butter-boat with a little salt, then pour over it equal quantities of oil and vinegar; mix all well together; take it cold, as it is, with your hot meat,

and the result, I am sure, will be highly satisfactory. This sauce is more particularly pleasant in summer.

III.—A Reminiscence of Wales.

In my early days I lived for a year in Wales, a greater portion of that time near Swansea. I was a bachelor. My landlady was not an ordinary lodging-house keeper. Her husband had taken a fancy to me as a friend, and I boarded with the family. Mrs. Morgan Evans humoured my epicurean tastes, and among the dishes which I used more particularly to enjoy was a peculiar combination which may be recommended on the score of economy. The great thing in cheap cooking, I take it, is to make the best of good meat, to make it go as far as possible in a large family. Mrs. Morgan Evans one day introduced a dish especially for me, and which I frequently afterwards ordered. Take some mutton chops, not too fat, and fry them in a frying-pan. When they are nearly done, put them on a gridiron for a few minutes. Into the pan, where they have been frying, throw a pint or quart of cockles, flavoured with laver-weed, and cook them in the fat or gravy of the chops. When done, serve up with chops. This is a peculiar combination of fish and meat. The fish is cheap and wholesome, and "makes the meat go further," as Mrs. Morgan Evans said. I do not recommend this compound as a dainty or delightful one. As a young man, I liked it much. Cockles are very cheap at Swansea. They are brought to market unshelled and ready cooked, in cart-loads. Laver-weed is a peculiar kind of sea-weed. Gosse, in his hand-book to South Wales, describes it as one of the edible curiosities of the Gower coast. Women attend the Swansea market and sell it in small round pats at *1d.* and *2d.* each. Gosse says that the weed (*ulva porphyra laciniata*) makes an excellent ingredient in sauce for mutton. This no doubt gave rise to its mixture with cockles, the two cheapest things in the market. Laver-weed is got close to low water mark, washed well in sea water to free it from sand, then boiled for twelve hours, and seasoned with salt. In winter it is only necessary to boil it for two hours. The weed grows rapidly except in winter, and is renewed every other spring tide. It is also used in some parts of Scotland, on the coast, where it is called *sloke* or *slokum*. I do not consider it "a dainty dish" by any means; but it is worth while trying it when you are on the Welsh coast. An excellent substitute for laver-weed with your cockles, is parsley, or any herb that may be to your taste.

Osiris.

NUTRITION.

Among the lectures delivered during the recently closed session at the Royal Institution, those by the Fullerian Professor of Physiology are of special interest to our readers, not merely because the subject chosen is most closely connected with all questions concerning food, but because it was handled by a man of reputed technical knowledge, with an appreciation of his audience, which is generally more desired than met with. The audience present on the several Tuesdays manifested unmistakably their approbation of the lucid and agreeable manner in which Dr. Michael Foster gave his discourses on "The Nutrition of Animals."

At the outset the lecturer dwelt at some length upon the remarkable illustration of the elementary principles of nutrition as exhibited by animals of the lowest type—the Amœbæ. These creatures are apparently but globules of some gelatinous substance. They exhibit no organs and no particular development, but they nevertheless possess life and the powers of nutrition. They seize their food by wrapping their bodies around it, and they evidently digest, for the food gets fainter and less, while the animals themselves become larger. Ultimately that part of the food which is not assimilated is rejected. Our own bodies are so many aggregates of amœbæ. The whole lot gives up waste, feels, moves, and breathes. If in a mass of amœbæ parts were told off to feed, others to get rid of waste, and if altogether there was a division of labour, the similarity would become still more apparent. Suppose the interior to break up into liquid matter, then we should have an internal medium corresponding with an external one. The blood in our own bodies is the internal medium to the muscle which feeds, breathes, and wastes.

The life elements of every animal body are water, carbonic acid, saline matters, and ammonia or spirits of hartshorn, which latter had better be looked upon as spirits of all living things. These life elements are stable and fixed; the body always breaks up into them. It crumbles as it were to pieces, and in order to replace the constant waste the animal has to feed, and its food must contain these same elements. Thus the living structure may be compared to a fountain; the stream of various falling drops constitutes the apparently solid ray, and our life is but an aggregate of so many moments, no two of which are alike.

Besides the component elements, there is the energy in the living body, and this is set free in different modes. The elements themselves, however, are not adequate food; an animal could not be fed on tartrate of ammonia and saline matters; but these substances put together and allowed to produce, yield mould, and this, being combustible, or, in other words, containing energy, may constitute an animal's food.

A dead body is a grouping together of dead compounds. There is considerable difference as regards the possibility of preserving matters. The constituent parts of muscles, of fibrin, fat, etc., can always be preserved; but the food itself, only as long as the equilibrium is maintained. The living tissue cannot be preserved at all. In our illustration of the fountain we may look upon the elements of which our bodies are composed as the water, upon the food while taken as the water raised, and upon the tissues such as our muscles, for instance, as the water at play in the fountain.

Plants transform life elements into vital stuffs—broadly speaking, by deoxidation, or unburning, as Dr. Odling renders it.

When an animal is fed on proteids, say meat, do we obtain proteids in the body? Other similar questions arise. If we feed on fat, do we produce fat? Are there holes in the muscles, and does the food filter straight through and into them? All these questions, undoubtedly of the highest interest, cannot be approached directly. When we give food to an animal, we make out the result of it by what has happened to many different members. We are little informed as to the actual process going on; but it will appear further on that the fat or flesh which we make is not dependent upon the fat or flesh which we eat.

We stand, as it were, telescope in hand, watching the work of a distant mill. We see the building, we perceive the flying arms, we are even able to calculate the import and export, but beyond that our insight is stopped by the encasing walls.

The body is an association of groups which severally fulfil the function of life. The nervous system mainly feels, but it also breathes. All these groups live on the blood. One of these systems, the muscles, performs all the movements of the body whatsoever. A muscle is a fleshy *quasi* cylindrical body attached to the bones by bands called tendons. It is a living substance, and its main work is to produce movement. This is brought about by contraction. Whenever a muscle is at work, it shortens; and this power of contraction by stimulus constitutes all the complicated performances of a living being. It varies with the quantity of life in the muscle, and as it dies, so does its contractibility diminish.

Its death is caused by the stoppage of its supplies. When the heart ceases to send forth currents of blood, life soon subsides. But there are parts of our organism which are sooner affected and destroyed than others. The brain, for instance, can only live a very short time without blood, and when we speak of death generally, we mean the death of the brain indicated by the pallor of the face. The muscle, however, holds out longer, and especially in cold blooded animals. A frog may seem all right with its heart removed, and its muscles will live for hours and days in cold weather without a supply of blood.

One of the chief constituents of muscle belongs to the class of substances known as proteids. They refuse to crystallise, and are perhaps no chemical substance at all. Being always in a state of change, they may be half dead and half alive only. Directly we handle muscle chemically, it is dead, hence it is difficult to tell what the actual construction of living muscle is. Its structure appears to have the stability of an inverted pyramid, that is, a tendency to tumble over. It is made only to be unmade again. Food on its way to conversion into muscle travels as an ascending series it goes back into the blood as a descending series.

A most interesting question arises with regard to the chemical relation of muscle. Is it acid or alkaline? Now, living muscle is slightly alkaline while dead muscle is distinctly acid. One is inclined to come to the conclusion that life itself is a matter of acids and alkalies.

Living muscle is transparent; when dead it is stiff, rigid, and opaque. This stiffness, however, is not due to the influence of cold, since it is hastened by the application of heat. The changes caused by death may, in fact, be arrested by freezing. Life itself would thereby not be restored. The case would be similar to that if a vehicle when upset, but with its wheel still going on turning. Deprived of life, the accomplishment of work is at an end, the impetus is gone, and the sparkling, sprightly fountain sinks to the level at which its waters bubble away devoid of united action and form.

Many tissues will exhibit signs of life although death has set in. If a fresh muscle is stimulated by connecting it with the poles of a galvanic battery, as the lecturer demonstrated by experiment, it will at once exhibit signs of life. Although one hundred times its own weight be attached to it, it will lift that readily.

Muscle feeds and lives upon the blood; but the action of that fluid is not only to give store but play also. It may be said that a warm blooded animal lives up to its income. At a stage when

muscle has become rigid, it is difficult to restore it to life, although it is not impossible to do so.

Blood, in its turn, lives upon food. The two are separated by a wall consisting of many cells which are masses of protoplasm. These cells form a thin impervious layer, in which are no holes. They are alive and feel. In contact with solid food they manifest that life by pouring out a fluid somewhat after the manner of the eye shedding tears. They allow perfectly fluid substances to pass, but of our common food stuffs, sugar is the only one which in this sense can be termed perfectly fluid. Neither proteids, fats, nor albumen as such are allowed to pass. Their solidity is the cause of this, and our mode of cooking renders the former bodies, such as meat for instance, still more solid. Nevertheless our organisation is quite able to cope with these difficulties.

In the digestion of foods we have three great divisions or tracks to consider, viz., the digestion in the mouth, in the stomach, and beyond the stomach. The nervous system brings it to the knowledge of the central sensatory station when food is present in the mouth. Sets of nerves specially used for the purpose relax the pressure on the arteries; this allows more blood to pass into and through them, and this again increases the work of the membrane. Sometimes mere imagination sets the nerve apparatus to work, or stops its functions. Children looking in at a pastry cook's window occasionally experience the uncalled for activity of their nervous system in the watering of that particular organ where they fancy the savoury looking tarts ought to be. The subject reminds one of the peculiar kind of trial known as the rice ordeal. The accused has to chew a certain amount of rice, and his incapability of digesting it is looked upon as a proof of his guilt. Fear would naturally have the effect of keeping the mouth dry.

E H. Fournier.

[To be continued.]

A curious trade has sprung up between France and Persia in beet-root sugar, which has quite superseded the supplies formerly brought from England. It seems that presents given on *fête* or birthdays, or on the occasion of distinguished visitors, mainly consist of articles of sugar, for which purpose the beet-root sugar—being light, porous, and cheap—is very well adapted. To facilitate this, the French send out loaves of sugar with a deep hollow underneath, like that which exists in our champagne bottles. In both cases, the deception is complete. On the other hand, to compensate us for the loss of our sugar trade, the Persians get their tea from us instead of from the Russians, who formerly held the monopoly.

THE CONDITION OF THE WORKING CLASSES.

No. 1.—Belgium.

Some few months ago I endeavoured to lay before my readers a brief statement of the cost of living in various countries, in the interests of that class of society in which the desire of making or spending money induces a residence abroad. I propose to carry out a similar course with regard to the artisan and labouring classes, reliable information about whom is particularly important in these times, when the struggle of labour against capital seems to be extending over the whole of the civilised globe. But independently of political movements, there are very valuable lessons to be learnt with regard to questions of social and sanitary economy; and though we in Great Britain pride ourselves on our public and private spirit in these matters, there are many points on which we may gain information from our neighbours. Even were this not so, it surely cannot be uninteresting to know how millions of our fellow-creatures are getting their daily bread, and how the masses of each country are affected by the difficult problem of how to get their daily bread.

We need not be at any loss to obtain this information, for the reports of H.M. Diplomatic Agents and Consuls, which have been published on these topics from time to time, are brimming over with valuable knowledge, and it remains for us to apply it. I take these reports as the basis of these papers, because blue books are so seldom read by the outside public, that their value is little recognised; and where I can, I shall endeavour to supplement them by personal observation, or enquiries that I have been able to make.

I shall commence with Belgium, partly because it is so near to England, but principally because, from geological formation, the industrial classes, to a great extent, find themselves engaged in a similar manufacturing career to that of our own population. Belguim too, possesses, unfortunately for herself, conditions of difficulty which are very similar to our own: for being one of the most densely inhabited kingdoms in Europe, and, moreover, one from which comparatively few depart by emigration to other countries, there is always a large surplus, whose resources fluctuate with

the times, and whose normal lot is one of struggling, too frequently reaching the zero of starvation. One-fifth of the people, or 900,000, are constantly receiving poor relief—a dangerously large proportion to deal with in crises of commercial stagnation, especially as there is at the best of seasons such a superabundant demand for work, that the wages are thereby kept at a low rate. It is estimated that there are about 2¼ millions of *bonâ fide* working men, who have to support themselves and families. Of these nearly 2 millions are employed in agriculture, the coal mining, and manufacturing districts; and there is always a considerable section of bad, careless, improvident or mischievous men, who find a difficulty (which they often help to create) of making both ends meet. These men and their families are, as a rule, badly housed, especially in the towns, though in the country, workmen of moderate calibre and steadiness are generally cleanly and comfortably lodged, more so than is usually the case in England.

The agricultural labourer in Belgium frequently finds it a matter of great difficulty to live, particularly if he has a young family not able to work and add to the general store. The wages for men in summer and winter are 2fr. 25c. and 1fr. 50c. respectively, and for women 1fr., and 80c. The average agricultural earnings are about 50fr. per month, which is pretty nearly all consumed in lodgings and actual provisions, leaving little or nothing for clothing, firing, etc. If the wife works out, she may add another 25fr. to the store, but this is, of course, only in case of there being no children to look after.

Clothing is very much what it is in England, viz., that in becoming cheaper, the quality has deteriorated. The workmen generally wear a blue blouse and a cap, while the women too often indulge in finery, which is suggestive of dirty underclothing. The food differs according to the position and the work in which the artizan is engaged, men in the iron works and collieries feeding more heartily and eating more butchers' meat than agricultural labourers. The latter live upon bread, butter, potatoes, and fat pork, while in the Namur and Liege districts (the chief quarters of the iron and gun trades), the food consists of white bread, coffee, milk, butter, cheese, vegetables, bacon, meat twice a week, and beer. The drawbacks to this healthy-sounding diet are that the coffee is so strongly adulterated with chicory that it is frequently a mere tincture of the latter, the coffee being conspicuous by its absence. The hucksters, too, adulterate and manipulate everything that they sell in the most barefaced manner, trusting with very good reason to the carelessness and ignorance of their customers. In fact,

there is no country in the world where the workman is more at the mercy of the small shopkeeper than in Belgium.

In the woollen manufacturing district of Vervier, the Walloons principally carry on the work, and as they are more active and energetic than the Flemish, their condition is altogether superior. In some parts, however, as at Alost, where sewing thread is made, the distress is often very great, the men earning only 1¼fr. to 1½fr., and the women 60c. to 75c. a day. Under these circumstances they seldom see meat, living for the most part on black bread, potatoes, and dripping.

The men in the colliery districts of Belgium are apparently of a lower grade and stamp than colliers in this country; they are restless and mischievous, "and very often, far from working for the profit of their employers, they deliberately tread under foot and waste their best products; they rejoice at the wrong that is done, and at the loss which ensues, and do not see that they are all the time acting against their own interests." There are of course honourable exceptions, principally composed of men belonging to evangelical congregations, who are honest, laborious, and economical, and who study to preserve the relations between employer and employed. The rate of wages is about 3½fr. per day; women, who, it appears, are still allowed to follow that dangerous and degrading occupation, earning about 2fr. The morality amongst these latter is, as might be expected, at a low ebb, as was the case in our coal fields before the employment of women underground was rendered illegal. Brickmakers constitute the emigrating class in Belgium, although the emigration only extends as far as France, where they go to obtain work in summer. While so occupied they earn 5½fr. a day, from which two are deducted for their food, consisting of second quality bread, 1lb. of butter, and 1lb. of meat per week. They are lodged in sheds, and sleep on beds supplied by the master, and furnished with a straw mattress, two sheets, and a cotton counterpane.

There does not appear to be any peculiarity about the sanitary condition of the people, save that which arises from climate, which is somewhat cold and humid, and predisposes to scrofulous and pulmonary diseases. Insufficient and unwholesome food plays its part in the deterioration of the natural health, as it does in other countries; and the crowded and ill-ventilated dwellings of the towns are still more prejudicial. Antwerp contains far too many of these.

The following tables are interesting, as showing the relative position of the working man in Antwerp and London. It would be well for the latter to study this point, and to recognize the fact

that, while provisions are of much the same price in both places, the Antwerp artizan only gets half the wages that his London brother gets, and yet the latter is seldom or ever satisfied :—

Table 1.—*Average daily wages.*

	Antwerp. s.	d.	London. s.	d.
Carpenters and Joiners	2	3	5	6
Stonemasons	2	5	5	10
Mechanics	3	0	4	6
Bricklayers	2	3	6	3
House Painters	2	7	4	6
Engine Drivers	4	0	6	8
Smiths	2	5	5	9
Bleachers	1	8	4	6
Labourers	2	0	3	6
Candle Makers	1	10	6	0

Table 2.—*Cost of necessaries.*

	Antwerp. £	s.	d.	London. £	s.	d.
Bread (4lb. loaf)	0	0	8	0	0	8
Butter, fresh (per lb.)	0	1	2½	0	1	6
Potatoes (per ton)	3	10	0	3	5	0
Bacon (per lb.)	0	0	10	0	0	11
Beef and Mutton	0	0	7	0	0	8½
Pork	0	0	10	0	0	8½
Lard	0	0	10	0	0	11
Sugar (brown)	0	0	7½	0	0	3½
Coffee	0	1	0	0	1	1
Tea	0	2	10	0	2	8
Milk (per quart)	0	0	2½	0	0	5
Eggs (each)	0	0	1	0	0	1¼
Soap (yellow)	0	0	7	0	0	4½
Coals (per ton)	0	19	3	0	18	0
Rent (per week)	0	3	0	0	3	6

Clothing generally dearer in Antwerp.

Now, although the cost of provisions is about the same in Antwerp as in London, it must not be supposed that the working man is so much worse off as at first appears, considering that his wages are only half what the Londoner gets. The style of living is usually very different; and, indeed, the Antwerp labourer could not afford to live well if he wished. For breakfast he has his rye bread and chicoried coffee, without sugar or milk; for dinner, vegetable soup, thickened with potatoes or rice, followed by potatoes and salted fish.

At four o'clock he has a repetition of his breakfast, and at supper time, of his dinner, with perhaps a little salad for flavouring.

The Antwerp workman certainly has the advantage over the Englishman in his little luxuries. A glass of gin costs only ¾*d.*;

tobacco from 6*d.* to 10*d.* per lb., while he can purchase four pints of beer for 5*d.* True, the beer is weaker than the London beer; but on the other hand it *is* beer, and not a mixture of various heady and thirst-inducing materials, the consumption of which finds the workman poorer to a far greater extent than the mere money which he has spent on it.

Although, as I mentioned before, the dwellings of the working classes in Antwerp are not what they should be, very great improvements have been and are being carried out in this respect by the "Bureau de Bienfaisance," in the shape of model lodging-houses. There are now two streets containing about 170 houses—roomy, cheerful, well-lighted and drained, and let at prices varying from 2*s.* 6*d.* to 3*s.* 3*d.* per week, which is about the cost of a frowsy, dirty room in a back street. They are let under the following strict rules, and it is satisfactory to add that it is considered a decided privilege to obtain one of these houses.

1. They can only be occupied by the person named in the lease.

2. The tenant cannot underlet or take in any other lodgers, without the consent of the administrators of the poor. Neither can he keep pigeons, rabbits, pigs, or any other animals.

3. Each tenant is obliged to deposit, on taking possession, either 100 francs (4*l.*), on which he gets 5 per cent. interest, or a sum of 25 francs, the remainder to be paid in instalments of 5*d.* per week. This is intended for a security for his good behaviour.

PHILLIPS BEVAN.

We have received a little pamphlet by "M. A. B.," whose initials are well known as those of a staunch advocate of sanitary reform, and with whose remarks we, for the most part, entirely agree. She concludes a short sketch of nutritive treatment for children during cholera seasons, with the observation that, if poverty were the chief cause of infantile mortality amongst the labouring classes, the remedy could not be so simple; but ignorance is the real and most prolific source of the evil. We also agree with M. A. B. that inspectors should be appointed to make a house-to-house visitation, and enforce compulsory measures of sanitary laws. We are, however, of opinion that female inspectors would not be able to carry out the work with sufficient promptitude or stringency, except, perhaps, that their presence might shame the owners of houses into doing their duty. The remarks on dust-bins are excellent, and deserve every attention. The dust-bin in most London houses is a sink of iniquity.

THE WINES OF AUSTRALIA.—Part II.

Description of Australian Wines.—Products from a new country must be judged not only absolutely by reference to established standards, but also relatively with reference to their capability for improvement, if faulty or imperfect. By applying this process to Australian wines, we have come to the result, that many good qualities have already been obtained; that if the processes of vinification were better, these qualities would be greatly enhanced; that many wines, evidently made from excellent grapes, are spoiled by faulty preparation, or by want of proper nursing. To prove these points a little more in detail, we extract from the work of Toosey, a few notes on Australian wines, sent to England in 1860, and add thereto such other data on wines imported about ten years later, as we have been able personally to obtain.

1. *Verdeilho.*—Vintage 1857. Colour partridge eye; taste aromatic and nutty; full body; contains 29·4 per cent. proof spirit; consequently was brandied. If this wine was made from the grape whose name it bears, it shows that the maker was unacquainted with the art of making red wine.

2. *Frontignac.*—A thin white wine, possessing a slight flavour of the Muscat grape, being a fictitious elder-flower flavour. Alcohol= 29·4 per cent. proof spirit.

3. *White Wine of* 1857.—Agreeable, light, flavour of raspberries, which were probably put into the must; contained 26 per cent. proof spirit.

4. *Malbec.*—Described as being made from claret grape. Similar to continental claret. Stated to be of 1857, but was probably of 1859. Had the character of Hungarian wine, and contained 23 per cent. proof spirit. It was damaged.

5. *Tævoora.*—Described as a pure "Port" wine of 1859; of which species a very large quantity was under cultivation in 1860. The grower, Mr. Patrick Auld, hoped that this wine would ultimately become one of their largest items of export. It contained 27·2 per cent. of proof spirit.

6. *Red Wine.*—Was out of condition, and contained 33 per cent. of proof spirit.

In 1870 we obtained the following wines from reliable sources:—

7. *Tintara.*—A red wine, clean, with no particular character or flavour; somewhat brandied. Year and vines not stated.

8. *Adelaide*, white, 60*s*. per doz.—An exquisitely pure white wine, mainly from Riesling grapes. But there are other strong flavoured grapes admixed, which makes a complicated, but very fine and peculiar bouquet. There is a *soupçon* of muscatel, which would be better left out. The wine is a little too fiery for greatness, though stated not to have been alcoholised; equal to European wines of the second class.

9. *Adelaide*, white, 50*s*. per doz.—Wine of the same general character as the former, but less fine; a kind of *milieu* to the *tête*, No 8.

10. *Adelaide*, white, 42*s*. per doz.—The *queue* to the previous two wines; all the same qualities, but in lesser intensity.

11. *Adelaide*, white, 36*s*. per doz.

12. *Adelaide*, white, 30*s*. per doz.—These wines have also the general character of 8, 9, and 10, but they are somewhat spoiled during vinification or transport, so as to have contracted a mousy taste, a flavour of volatile acidity, and the faculty of becoming darker on exposure to air. These faults could be easily remedied, and then the fine qualities would stand as to price in proportion to each other and their relative value. But compared to the absolute price of equivalent white French and German wines, all fine qualities are yet somewhat too dear.

13. *Wattlesville*, white, 24*s*. per doz.—An acidulous wine, of no particular quality.

14. *Adelaide*, red, 48*s*. per doz.—This wine is full of vinosity, body, and peculiar mild flavour. It is somewhat too hot, though stated not to contain adventitious brandy. It is in its way equal to Burgundies of the same price, third class, but resembles more to fine Hermitage, third class.

15. *Adelaide*, red, 42*s*. per doz.—Similar to No. 14, but less fine. Also a valuable wine, free from fault.

16. *Adelaide*, red.—36*s*. per doz.

17. *Adelaide*, red.—30*s*. per doz. These wines are similar in general character to the Nos. 14 and 15, but have faults, such as mouse taste and acidity.

18. *Australian*, place of growth unknown, 24*s*. per doz.—Brownish unfavourable colour. Not worth its price.

19. *Adelaide* at 18*s*. per doz.

20. *Wattlesville* at 18*s*. per doz. These wines are mousy, contain vinegar, and are naturally acid and unfavourably coloured.

21. *Sweet Liqueur Wine*, feeble Muscat flavour, sold in pints 35*s*. per doz.—Pure, free from faults, but somewhat too acid. In addition to these wines, of which No. 8 to No. 21 are imported by an

active firm, we have tasted the wines of another importing house as follows :—Muscatel at 20*s*., a thin wine, elder flavoured ; Tokay, 36*s*. ; Chasselas, 40*s*. ; The Monalta Claret, 18*s*. This house also formerly imported wines made from the Pedro Ximenes, Riesling, Shiraz, and Black Portugal grapes, and bearing these names, and others coming from the vineyards of Angaston, Bellvester, Buschefelde, Clarendon, Evanston, Glen Ervin, Highercombe, Inkermann, Morialta, Para Para, Payneham, Pewsey Vale, Torrens Park, Seppefield, Tanunda, and others. But the inquiry and sale were so small that, after the first consignments were exhausted, no further importations took place. To many of these wines which had been carelessly shipped, brandy had to be added after their arrival in England.

Conclusions.—From the foregoing, we have no doubt that the best and superior qualities of Australian wines will be able to obtain and hold a mercantile position by the side of the second and third classes of European growth.

The Australian viticulturists should continue to find the most suitable situations, and the vines most advantageous for them. In view of the dearth of human labour, they should so arrange their vineyards as to admit of their being cultivated with the plough. They should be particularly careful to keep their vineyards free from weeds, as these, even in warm countries, do not permit the grapes to attain perfect maturity or colouration, and stunt their development. The vines should be kept low and methodically pruned, and be broken back after the blossom. The proprietors should adhere to the practice of making wine from pure sets of grapes, and avoid mixing heterogeneous fruit together. They should carefully study and arrange all details of vinification with a view of producing pure, natural, unbrandied wines, capable of lasting and of being transported to any country or climate, a problem which, in these days of scientific progress, is easy of solution. They should notice, respecting each vintage wine, the following points of character :—The place and year in which it is made ; the vines from which it is produced ; if made from a mixed set ; the proportion in which each variety is present. With such data wines become more valuable, because their probable development can be predicted, and consequently guided to a useful purpose.

J. L. Thudichum, M.D.

MARKETS OF THE MONTH.

My anticipations, in the August number of the *Food Journal*, with regard to the chances of bread shortly becoming cheaper, have, alas! failed to be realised; for, notwithstanding the fact that our wheat harvest has been, generally speaking, quite up to the average, and garnered, too, in good condition, the reports of the London Corn Exchange and provincial market towns tell us a tale which falls sadly on the ear of hard-working people. Satisfactory as it may be to our agricultural capitalists to read that "Flour has been firm, at prices tending upwards," it is an "ower true tale" to the masses, and means that hard times for the poorer members of the community loom in the distance. The meat market has experienced but slight fluctuations since my last report; there has been no appreciable reduction in prices, but still there has been a slight tendency in favour of buyers, and it is the opinion of many experienced persons connected with the trade that ere long meat will be cheaper. Pork, as before, is the cheapest meat, beef stands next, and mutton heads the list. In some districts the potato disease has made its unwelcome appearance, but, generally speaking, the crop will be a good average one. Prices at present range from 3*l.* to 4*l.* per ton for best kinds. Apples, as I anticipated, are dear, good samples fetching 10*s.* per bushel. Greengages, and plums too, have been unusually scarce; the former were worth as much as from 16*s.* to 20*s.* per bushel. I think that we may expect turnips and carrots to be cheap. Peaches and nectarines have fetched from 3*d.* to 9*d.* each; English grapes from 2*s.* to 4*s.* per lb.; Jersey grapes from 1*s.* to 1*s.* 6*d.*, but Jersey "muscats" are worth 4*s.* or 5*s.* per lb.; English pines from 7*s.* to 10*s.* per lb., according to size; melons from 3*s.* to 5*s.* each; Spanish melons may be purchased for 1*s.* or 1*s.* 6*d.* each. These are wholesale prices, and will of course rarely tally with the greengrocers' charges. Pears are very scarce, and will be very dear. It is a good season for tomatoes. Naples lemons are fetching from 25*s.* to 30*s.* a chest; and Malaga lemons, at the time of writing this, have arrived in market, but are very green; they are worth 3*s.* or 4*s.* more per chest than the Naples. Grouse are cheap, from 2*s.* to 3*s.* each, but partridges are very scarce and dear; a

fact which the sportsman as well as the epicure must deplore. A good sized young bird is indeed a *rara avis*, but I regret to say that I have seen many small ones, no bigger than pigeons, hanging in the dealers' shops. It is a shame to slaughter such little innocents. Young birds, if a fair size, are worth 5*s*. or 6*s*. 6*d*. a brace, and old ones from 3*s*. to 4*s*. Hares are worth 4*s*. each, or less, if small; rabbits are plentiful, and fetch from 1*s*. 3*d*. to 1*s*. 6*d*. each. Pheasants have, as a rule, done well, and I think will not be dear. Chickens, ducks, etc., are worth from 4*s*. 6*d*. to 6*s*. 6*d*. per couple. Irish fowls from 1*s*. 6*d*. to 2*s*. each. The geese are amassing flesh on the stubbles, preparatory to their appearance in market at Michaelmas, and are worth from 6*s*. to 10*s*. each. The sugar market has been dull. The lovers of ripe Stilton, and the connoisseurs who appreciate the delicious blue mould which it is the nature of this cheese to develop under favourable circumstances, will be glad to hear that it has been an exceptionally good season for their production; the cheeses are rich and plentiful, and consequently rather cheaper. But the demand is so large, and the number produced is so limited, that they will doubtless command as high a price as usual. At Leicester Fair they were sold for from 1*s*. to 1*s*. 2*d*. per pound, according to the character borne by the dairy, for the initiated are well aware that there are Stilton and Stilton. The fish market presents nothing worthy of notice, and, as my report has exceeded the very limited space which the editor can devote to this subject, I will only quote, by way of conclusion, the state of the Cork butter market on the 12th of September. Ordinary: firsts, 6*l*. 5*s*.; seconds, 5*l*. 15*s*.; thirds, 5*l*. 1*s*.; fourths, 4*l*. 14*s*.; fifths, 4*l*. 3*s*.; sixths, 2*l*. 16*s*. Mild cured: firsts, 6*l*. 9*s*.; seconds, 6*l*.; thirds, 5*l*. 15*s*. In market, 1,700 firkins. Fresh butter has advanced in price, as is usual at this season of the year, and is worth, according to quality and locality, from 1*s*. 5*d*. to 1*s*. 10*d*. per pound.

P. L. H.

A PAPER was read before the British Association at Edinburgh on a new method of preserving meat by muriatic acid. The Rev. Mr. Highton, the author had succeeded in keeping his meat and fish sweet for many months, either by dipping the article into the acid and exposing it to the air to dry, or by enclosing it in a close vessel with the acid, so as to prevent evaporation. In either case, little or no taste was left behind, save a slight one of common salt.

CORRESPONDENCE

WASTED MONEY.

Sir,—The article on "Waste Food" which appeared sometime since in your deservedly popular Journal afforded me great satisfaction. The sentiments enunciated are creditable to the head and heart of the writer. They are greatly needed in the present day, for self-gratification from *created* wants pull largely on the resources of the people of all classes and all creeds; much, it is to be feared, to forgetfulness of Him "from whom all blessings flow," and the necessities of our poor neighbours, whose "rights" are excluded from mental vision. Dr. J. C. Murray, who has signalised himself as the friend of smokers, has revived in my mind the article to which I have alluded. He says:—"The duty on the imported tobacco leaf, in 1870, yielded to the British Government £6,548,000; that 548 manufacturers were engaged in preparing it for the market, and 280,000 retailers wholly or partially supported by the sale of the commodity in its various forms." We are accustomed to speak of the cost of tobacco by the time it gets into the hands of its consumers, with appendages for its employment, including all sorts of pipes, snuff-boxes, and the general paraphernalia, as equal to the amount of duty, which together would be something more than £13,000,000; but Dr. Murray's figures lead to some calculations which are calculated to excite consternation. If, for example, each of the 268,000 retailers of tobacco were annually supplied with only £20 worth, exclusive of duty, the manufacturers would have to prepare for the markets £5,360,000 worth; and if the average profits of the retailers were £20 per annum, that would be another £5,360,000. Neither foreign cigars, nor appendages for the employment of tobacco, are included in these statistics; nor is it possible to conjecture, within some hundreds of thousands of pounds, what the expense of these would be, but another million pounds may be safely added; therefore, the forenamed items would stand thus:—

One year's supply of tobacco	£5,360,000
One year's profits to retailers	5,360,000
Foreign cigars, pipes, etc.	1,000,000
One year's duty	6,548,000
	£18,268,000

These statistics are enough to turn an infidel pale, but what ought their effect to be on those of our countrymen and countrywomen who view them in relation to Him to whom we are accountable for the employment of our time, our talents, and resources? If you can spare space for this communication, it may induce a more competent calculator to supply a more correct table.

I am, sir, your obedient servant,

Stoke Newington, September, 1871. Thomas Reynolds.

DOMESTIC RECIPES

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

MARMALADE PUDDING.

Take half-a-pound of flour, half-a-pound of mutton suet, four eggs well whisked, a pound of orange marmalade, two table-spoonfuls of sugar, and mix with a sufficient quantity of milk to make the whole of a consistency of a *pancake* or hasty pudding. Tie it up in a cloth, put into boiling water, and boil for two hours. This makes an excellent pudding, especially when eaten with weak sherry sauce.

BROWNED OATMEAL AND FAT.

A favourite dish in some parts of Scotland, as in Athol, and other semi-Highland districts of Perthshire, is made by toasting oatmeal—*round* oatmeal, not fine—on a toaster before a bright fire, occasionally stirring it, till it is thoroughly browned, then adding some fat of beef or mutton, with a little salt and pepper, and onions chopped small, after which the whole is further toasted. It is one of the most palatable preparations of oatmeal, and is a very wholesome and nutritious article of food.

THE MONINS CREAM.

Put 1 pint of thin cream into a saucepan lined with enamel, with ½ oz. of Brazil isinglass and a little sugar. Let it warm. Then mix well with it the yolks of 5 eggs, and put them into a saucepan, keeping them well stirred, but not allowing them to boil. Flavour with vanilla, rose, and almond essence, or whatever is liked best. Put it into a mould, and turn it out when wanted. This is a most delicious dish.

The skate, which is in season all the year round, but which is considered to be at its best in summer, is scarcely appreciated as it deserves to be in England, although it is highly esteemed in France. There are hardly more than two good methods of serving up skate: with white sauce when it is quite fresh, and with *beurre noir* or burnt butter when it is not quite above suspicion. In both cases the fish is boiled, having been previously well cleaned and skinned. The last is an excellent way, and is the favourite in France. To make *beurre noir*, melt some butter in a frying-pan until it turns a bright brown. Throw in some sprigs of parsley, and season it with pepper and salt. Add a little *hot* vinegar, or a squeeze of lemon juice, which is to be preferred. Of course a really clever cook would blush to limit himself to such vulgar modes of preparing skate, but would serve it up in some mode with its own liver, and even fried, or would treat you to *Raie à la Ste. Menehoult, à la sauce Robert, en ragoût*, etc.; but there is no way better than plain boiling, with *beurre noir* for sauce.

NOTES OF THE MONTH.

We are sorry to hear that the English Beet-root Company has not succeeded in effecting a lodgment as yet as one of our British industrial concerns, though we are sure that with a little patience it will still be *un fait accompli.* In the mean time, in isolated districts the cultivation of the beet-root for sugar-making is gradually extending, as at Sandwich in Kent and Sleaford in Lincolnshire. The British farmer is slow to move; but once he makes up his mind to do so, he moves with a will; and so it will be with beet-sugar in the course of a few years.

Mr. Sedgwick Cowper writes on the subject of that most lamentable complaint, cancer, in the treatment of which a new remedy from Ecuador, called conderango, has been tried of late, though, we fear, with but little success. Mr. Cowper has seen in New South Wales the happiest results from the use of a vegeto-mineral oil, known in Australia under the name of kerosene, obtained from a species of mineral slate in the carboniferous strata, and procured at a nominal cost of about 2*s.* 6*d.* per gallon. A large block of this slate, from the Hartley Pits (N.S.W.), stood at the door of the Sydney Annex at the International Exhibition, and we would suggest, that now the Exhibition is over, an immediate trial be made of the oil therefrom.

A Pamphlet, too short for the importance of the subject, has been sent to us by the author, Dr. Corner, the medical officer of health for the Mile-End district. It deals with the question of open spaces and their necessity, in a sanitary point of view, to the smoke-inhaling population of this large, over-grown city. Dr. Corner suggests that zones of land should be apportioned off, which should be sacred from the profane hands of speculators and builders, and should serve as our fresh air storehouses, and as barriers, to a certain extent, to secure us a definite amount of oxygen. Such an arrangement would add much to the health of the population, and be a very great improvement to the decorative beauty of the metropolis, if it could be managed. But this, we fear, is impossible, under the existing circumstances of the enormous value of land for building purposes, and the absence of any influence to prevent people from getting as much out of it as they can. But is it impossible, in the re-arrangement of buildings by the Board of Works, to here and there obtain an open space, however small, for children's playgrounds, which will not only serve that purpose, but also let a little light and air into hundreds of pent-up dwellings? Is it impossible that some understanding might be come to between the London School Board (and what will apply to London will apply to other cities) and the various corporate bodies, for open playgrounds, even if not immediately attached to the school, to form a part of the educational system. To reclaim the gutter child and the city arab is a noble portion of the scheme, incorporated with which we would fain see the establishment of small and scattered health resorts such as we mention. Improved health means improved cleanliness, which is a strong element of morality; and on all these grounds we cannot but desire to see the matter seriously taken in hand, not by private influence, for it would be too weighty to be undertaken thus, but by some powerful public body, with means equal to its intentions.

Served Him Right.—On the 14th July, Mr. O'Donnell, a Dublin police magistrate, sentenced a butcher named Connell, to three months' imprisonment for having in his possession the carcass of a diseased cow intended for human food. Dr. Cameron deposed that the carcass was in an advanced stage of contagious pleuro-pneumonia, and it transpired in evidence that it had been bought for 12*s.* 10*d.* by the butcher.

We are very pleased to note that the Liverpool Corporation are about to consider the advisability of appointing a public analyst to carry out, as far as such a miserable law can be carried out, the intentions of the Food and Drink Adulteration Act. This is the third town which during the present year is adopting this course, and we hail it as a slow though sure test of public opinion as to the necessity of more stringent legislation on the subject. We live in hopes that our rulers may ere long begin to understand that this and other questions of sanitary reform are really of importance to the people of Great Britain—*almost* as urgent as the question of recording a vote *vivâ voce* or by a bean in a box.

NOTICES OF BOOKS.

A History of the Welsh Fasting Girl. By Robt. Fowler, M.D. London: H. Renshaw.—Dr. Fowler's very interesting *resumé* of what is, perhaps, the most remarkable case of modern times, may be read with pleasure by both the professional and the general reader, and we are glad that the details have been brought together in a compact form by one whose mission gave him unusual opportunities for observation, and who was so well qualified to make use of them. That Sarah Jacobs died of absolute starvation, the victim of a morbid and perverted will on her own part, which was strongly fostered on the other hand by the miserable ignorance and cunning of her parents, was patent to every unbiassed reader of the case; but it was nevertheless one of the most interesting examples on record of so young a child carrying out the determination to act a part with such unflinching pertinacity. It is, perhaps, not unworthy of notice that the principal cases of abstinence from food, of which details have been supplied to us, have been those of natives of Brittany, Scotland, and Wales, all of Celtic origin, although, perhaps, it only goes to show that Celts are more open than others to superstition and credulity. We understand that a fasting woman is now on view at Walton-le-Dale, near Preston, but we fear that after the *exposé* of the Welsh case she will not obtain much sympathy; especially as, in the latter case, there was sufficient mystery and peculiarity about the whole affair to make people half inclined to believe in it, whilst an ordinary vulgar imposture would not have been listened to.

Disinfectants and How to Use Them. By E. T. Wilson, M.B. London: H. Lewis.—The value of advice is not to be estimated by the space which it takes up; and in these days of "run and read," Dr. Wilson has acted wisely in condensing, on a single small card, all the best known sanitary hints and remedies. We strongly recommend every head of a household to nail up one of these cards in a conspicuous place, so that everybody can refer to it, and be made to understand not only how necessary, but how absurdly simple are the rules of health. By following them rigidly, epidemics may probably be altogether kept at bay, and even if they do come, the knowledge of the laws that guide them goes far to mitigate the evil.

THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS.—Part XV.

On Provisions and Markets.

In our last article we dealt with the state regulations of Louisiana, as carried out at New Orleans, and we will now change the *venue* to the city of New York, and enquire into the laws there in force respecting the sale of provisions and live stock generally, which are, if possible, more precise than those of New Orleans. In the first place, there is an ordinance that no diseased or sickly horse, ox, swine, sheep, dog, cat, or other animal, or any that has been exposed to contagious disease, shall be brought into the city. Secondly, an animal in a street or public place which, in the opinion of the Inspector of the health department (and of any two discreet citizens called upon by him for their opinion), is injured or diseased past recovery, and is evidently not cared for by his owner, may be killed officially within one hour after being "interviewed" by the inspector.

Next, no meat, fish, fowl, bird, milk, or vegetables which are not of a sound and wholesome character, are allowed to be offered for sale or even brought into the city. No calf, pig, or lamb is to be sold for food which at the date of death was not four weeks, five weeks, and eight weeks old respectively, nor shall any "meagre or sickly" fish or birds be offered for sale for human consumption. All cattle that appear to be overheated and feverish, shall be immediately reported by the owner to the Board of Health, so that a proper order may be made relative to treatment or removal. No "cased,' plaited, blown, raised, stuffed, putrid, impure, or unhealthy meat, fish, or fowl, are allowed to be exposed for sale, under the penalty of $25.

In addition to these very wholesome regulations, those which deal with the supply of game are elaborate and precise. The following are the principal points:—Deer, of whatever kind, may be killed or offered for sale only between the 15th August and 10th January. Nobody is allowed to kill a fawn while in its spotted coat, and the hunting of deer with dogs is absolutely prohibited. Wild

rabbits may not be destroyed between the 1st January and 1st March. Wild pigeons may not be taken during the hatching season, and no person is allowed to discharge any firearms within a quarter of a mile of any known nesting ground. Wild duck may not be killed on any of the inland waters of the state between 1st February and 15th August. Any violation of these rules is punished by a fine of $50. Except during the months of August, September, October, November, and December, no person, under a penalty of $5 for each offence, is allowed to kill or sell any sort of wild bird, and their nests are protected under the like penalty. Grouse are never allowed to be killed except on private ground. Woodcocks may consider themselves safe from being killed or sold between January 1 and July 4; quail between January 1 and October 20; partridge between January 1 and September 1; prairie fowl between February 1 and July 1. A penalty of $10 is attached to any violation of these laws, and the destruction of the birds is absolutely prohibited, unless the land has been stocked with such game by those who kill it. Traps and snares for small game are prohibited throughout the state, and shooting is forbidden on Sunday under a penalty of $10 to $25, or imprisonment of from five to twenty days.

The regulations for the taking of fish are more complicated than for those of game, inasmuch as almost every one of the inland waters of the state is governed by rules only applicable locally. Medicated bait is, however, prohibited by the general statutes. Every dam which is more than 2 feet in height is required to have, during the months of March, April, May, September, October and November, a sluiceway in the middle of the stream of at least 1 foot in depth at the edge of the dam, and at an angle of more than thirty degrees. It must extend quite to the running water below the dam with protecting sides of at least 1 foot in height, so as to allow of the free and safe passage of fish. Brook trout may only be taken between April and August, though exceptions are made to this in some counties; hook and line only are to be used. Hake or salmon trout may be taken between 1st March and 31st October. Bass may not be caught between January 1 and May 1, under a penalty of $5. Seine nets are generally allowed in the rivers of the state, provided they do not encroach upon the main channels so as to interfere with navigation; and in these rivers, as in the principal inland waters, there is no preserving of the fish and no license is necessary for taking them. Seine nets for fresh water must be made with meshes not less than $1\frac{1}{4}$ inches, and for salt and estuary waters, not less than 5 inches in size.

THE STAFF OF LIFE IN KAFIRDOM.

The greater part of the black-skinned population of the colony of Natal, in South Africa, live at the present time exactly after the primitive fashion of their race. In this comparatively small stretch of territory, covering an extent of ground scarcely amounting to one-third of the area of England, an entirely untutored and primitive race of man may be most conveniently and readily studied in its absolutely original and unsophisticated habits of life; and the facility for observation of this class is certainly not made less pleasant by the fact that in the same little land the gradual and natural process by which barbarous man is civilised may be traced in steady and sure operation from year to year, where the outlying fringes of the living raw material come into actual contact with the European constituents of the community. There are nearly three hundred thousand black-skinned people in Natal, and not yet eighteen thousand settlers of European origin or descent; and as these eighteen thousand have been very slowly and gradually accumulating, the actual presence of the civilised element in the land scarcely yet exceeding the limits of a quarter of a century, it will be easily comprehended why it is that so much of the rude mass of aboriginal life is still untouched by the leaven that has been brought into beneficent play.

The Kafir races of the South-Eastern region of the great African continent are not really aggressive or warlike. They are naturally an agricultural and pastoral people, with easy and indolent proclivities, rather than with active ambitions and desires. The normal condition of their life is that which was found in the region now known as Natal, some three-quarters of a century ago, at which time the land was thickly crowded with the living beings who were its aboriginal inhabitants. It is known that within the bounds of the stretch of country which now forms the British colony there were not less than ninety distinct tribes, living quite in patriarchal fashion, each under its own leader or chief. These tribes were eminently gentle and peaceful. They constituted distinct clans; but they all spoke the same language, and followed the same habits of life. They were too densely packed upon the land to indulge in any nomadic propensities that they might happen to have possessed. They dwelt in fixed habitations,

cultivated the ground, and had herds of cattle and flocks of hairy sheep and goats, feeding upon the pastures that surrounded their huts and villages.

About the year 1820, however, the peaceful life of these old possessors of the soil was broken by the irruption of an aggressive tribe that had risen under the genius and leadership of a chief, towards the north-east. This tribe, under the peculiar management of this remarkable Kafir potentate, had swollen in ten years from an inconspicuous and unimportant clan to a mighty horde of armed and disciplined warriors that swept over the land far towards the south, and swallowed up all smaller tribes that lay in their path. The *rationale* of this new rule was simply that the ambitious chief, Chaka, having carefully trained and disciplined his men to act in banded regiments, with an organised strategy, made successive raids over the surrounding territory, and wherever he went broke up the petty tribes with which he came in contact, absorbing the young men into his regiments to increase the might of his following, which soon became known under the formidable name of Zulu-Kafir, and destroying, or scattering into flight and exile, the old men and the women and children.

When the first English settlers landed in the Natal district, in the year 1823, the work of devastation and conquest had been so efficiently performed there that the whole land, south of the Zulu frontier and outposts, which had been then fixed near to the River Umhlali, one of the streams of the Northern Division of Natal, was a desolate wilderness, where of the original population only a few lurking fugitives remained, hiding in the natural fastnesses and thickets of the country.

After the occupation of Natal by the first European Colonists—the Dutch settlers—the Zulus were driven back, and their power of aggressive mischief was effectually curbed. When the Dutch settlers came under the rule of British authority, and Natal was formed into a British colony, the River Tugela, some distance to the north of the original outposts of the Zulus in Chaka's time, was fixed as the boundary of Zulu dominion; and beyond that frontier line, Umpanda, a brother of Chaka, the first great warlike chief of the Zulus, still reigns. But within the colony a large native population has rapidly grown, and taken the place of the desolation that existed in Chaka's time. This result has been simply the natural consequence of the safety for life and for living possessions, which British rule has entailed.

At the present time there are forty-three native tribes in Natal, each of which has its own recognised chief, either standing as

the direct descendant of the old independent ruler, or as appointed by the Lieutenant-Governor. But there is this most important change in their condition—that these chiefs are all now subject, and subordinate to the magistrates of their district, and ultimately to the Colonial Government. Petty disputes and trivial relations are settled by the chiefs; but all important affairs are ruled by the civilised laws, and by the constituted authorities of the colony. Young natives come from these reserved localities to work for the white settlers under the temptation of wages. But the native locations themselves are entirely and exclusively in the hands of their black-skinned possessors. Their hill sides and grassy valleys are filled with Kafir villages and kraals; and in them the old habits of native life are resumed and reproduced identically as they existed in the Kafir villages and kraals that were on the spot when the wave of Zulu irruption and conquest swept over them. The Englishman who rides at this very day through the native districts of the colony, sees the economy and method of Kafir life exactly as they were before civilisation had opened its eye, and spread out its hand upon the region.

Wild Kafirs subsist mainly and primarily upon vegetable food. Flesh is to all of them, at any rate excepting to the chiefs and most wealthy patriarchs, the exceptional feast rather than the daily sustenance. The agriculture by which the daily food of the masses is produced is, however, of the rudest character. The huts are for the most part, placed on the open hill side, where they are pitched in a circular cluster, enclosed in a kind of "abattis" fence of felled timber and branches of trees. But the gardens are made, by preference, in bush ground, selected in some spot within easy distance from the kraal. The men clear the ground by cutting down the bushes and trees, and arrange them as a more or less compact fence round the cleared space. Their share of the business is then ended, and the tillage of the ground is thenceforth left entirely in the hands of the women, who first scatter the seeds broadcast over the ground, and then break it up three or four inches deep with ungainly picks to afford the seeds a chance of getting into the available soil. The crop and the weeds spring from the ground in close fellowship, and the weeds are subsequently extirpated by the use of the pick and the hand. Little watch towers of wattle and thatch are constructed within the enclosure, which in the case of the more open ground, are constantly occupied by boys or girls while the crops are in a condition to be injured by wild animals. In the more carefully enclosed gardens the watching only needs to be performed for brief intervals.

The two staple grains of Indian agriculture are maize and Kafir corn or millet. The maize is by far the more important of the two. Maize, indeed, is in the Kafir economy what rice is to the native of India. But, strange to say, it is not an indigenous plant of the African continent. The Zea maize comes from the western side of the Atlantic ocean. It is native to South America, and has been unquestionably introduced into Africa by human agency, though it is now of all but universal presence in Kafirdom. Among remote Kafir tribes of the far interior, where the face of the white man has not yet been seen, maize is known as familiarly as it is on the coast and in the opened out districts. Most probably it was brought in the first instance by the Portuguese adventurers who visited various parts of the African coast for purposes of trade, soon after the memorable days of Bartholomew Diaz. Its own marvellous cosmopolitan capacities and powers appear to have done the rest. Maize is now as emphatically African as Indian corn. It has so thoroughly seized upon the land that in all probability the Kafirs of the present generation are not aware that it is one of the blessings they owe to their civilised brethren from beyond the sea. The traveller in the remote and wild interior districts of Africa in the present day records that he has ridden through a well-peopled valley waving with "corn," and infers that all the world knows that it is "Indian corn," or maize, of which he is speaking.

When the maize of the Kafir garden is ripe, the cobs are cut from their stalks, the enveloping spathes, or leaf-sheaths, are stripped away, and the cobs are strung up in pairs, placed astride upon sticks, to dry in the sun. The dried corn grains are then beaten from the cobs by knob-kerries or clubs, and the grain is stored away partly in underground pits, contrived to be perfectly inconspicuous to casual observers, and partly in large earthenware pots. The cobs themselves are also stored, to a considerable extent, in large receptacles of basket-work, well raised upon platforms and carefully thatched over.

When a meal has to be prepared, a quantity of the maize corn, technically known as *umbila*, is taken from the store by the women, and transferred to an earthenware cooking pot, placed upon three stones, so as to allow a wood fire to be maintained beneath. A little water is added, a cover is turned closely over the mouth of the pot, and heat is applied until the hard grain is sufficiently softened for grinding. It is then placed hot upon a flat stone, and pounded, and rolled by a smaller smooth stone, until it is converted into a soft paste, or porridge (*isicaba*), which is passed off from the stone, as it is ground, to a piece of skin placed beneath, and then

packed away into a kind of basket, used by the Kafirs as a dish. In this it is served to the men, who sit round the basket and wield a flat bowled wooden spoon, set obliquely upon the handle, and passed round in succession from hand to hand. The handle is grasped by the hand, and the spoon adroitly turned over side-ways into the mouth, so as to be neatly cleared of its contents by the tongue. Sour milk, to be presently more particularly spoken off, is very commonly eaten with the *isicaba*, and is then taken from another basket deposited by the side of that which holds the porridge. The women and children feed apart from the men. The cooking, grinding, and serving the *isicaba* forms a considerable part of the daily occupation of the women.

Before the bright days of the advent of Indian corn, the Kafir corn employed in the fabrication of *isicaba* was almost entirely derived from a large grass of the millet tribe, which is still cultivated in the gardens, although now mainly for another purpose. The seed of this Kafir millet, known as *amabele*, is small, round, and very hard. In dimensions it hardly exceeds the size of the heads of large pins. The labour of preparing the *isicaba* must have been enormously greater when the millet had of necessity to be used for the purpose. It would be a curious question to determine how many grains of the *amabele* must have gone to the composition of one hearty Kafir's meal, before Providence had given to the wild natives of Africa the inestimable blessing of the Indian corn or maize.

Maize is now as truly and absolutely the great "staff of life" to the wild African tribes, as wheat is the staff of life in the temperate regions of Europe, and a most magnificent and effectual staff it is. The allowance to the native servants in Natal, who often get nothing besides, is three pints daily of maize-meal—or, as it is commonly termed in colonial language, "mealie-meal,"—for each man; and upon this allowance the bodily frame is kept in vigorous and full working condition. The growing and grinding and kneading of the grain food, and the mode of its service on the "feeding-floor," having been thus described, another occasion must be taken to relate what is worthy of being told concerning the "beer and beef" of Kafirdom.

H. J. Mann, M.D.

NUTRITION.—Part II.

One of the substances most extensively used for our nourishment is starch. It is contained in considerable quantities in almost all vegetables, including bread, which make part and parcel of our daily food. Before starch, however, can be made use of in replenishing the wants of the body, it has to undergo a change. It has to be turned into sugar, and this transformation is brought about by the action of saliva. Which part of this is the active principle is not as yet known. It is not the water, nor the proteids, nor the saline matter contained in it; but although we cannot define the substance itself, we know something about it. It has no energy of its own, and will only act assisted by warmth. A small quantity of saliva will convert any quantity of starch into sugar. So far it acts similarly to a ferment; it induces decomposition to go on *ad libitum*. In the presence of an acid it will not act, and hence it is necessary that the reaction in the mouth should be alkaline. The action of saliva on starch is a destructive one; it is converted into sugar, but we cannot turn that sugar again into starch; although it would appear from the presence of glycogen in the cells of the liver that our system can perform such a reconstruction.

From the mouth the food passes to the stomach, where it comes in contact with another and a different fluid, called the gastric juice. It is secreted by glands in the walls of the digestive membrane. The stomach is made aware of the presence of food through the nerve system. During starvation or absence of food it has a pale appearance from the want of blood; but when food is present the stomach responds speedily by bringing all hands to the fore. Soon secretion begins, and then there is a flushing and blushing all over the walls. Little drops stand out in beads until the whole surface weeps, as it were, with gastric juice. Like saliva, it is chiefly composed of water, but is acid in its reaction. Its active principle, although not obtained separately, is called pepsin. It is inert in absence of acid, and the one especially suited for the purpose is the hydrochloric. In the peptic cells there is a certain amount of work done during digestion, as in the case of the muscle; but the waste which in the case of the latter had become useless and was carried away, here becomes an im-

portant factor, for the waste products in this instance are the very useful pepsin and acid.

It may be asked, how it is that the stomach does not digest itself? It readily digests even a living frog, and yet it refuses an attack upon itself. Here our technical knowledge ceases; we must call the resistance *de facto* offered by a name, and say that it is the vital energy of the stomach which prevents its being eaten up itself. The amœba will afford an illustration; although a porous spongy body, it will keep out water during life, while at death it swells up, because there is no longer the power to resist the entry of the fluid. As a broad rule we can assert that all living substance is alkaline, and that life is manifested by the passing of substances from that into the acid state.

In order to produce digestion, a flow of gastric juice will have to be excited. The stimulants which are capable of causing such an excitement are numerous and varied. There are the ordinary condiments, bitter substances, sand, a piece of undigested food, etc.; but there is one stimulant which surpasses all others in effect, besides being the most harmless. It is a small quantity of dilute alkali, such as is contained in the saliva. That its effect is not always as potent as desired is attributable more to the blunted functions of the stomach, as is the case especially in old age, than to its inefficiency as a stimulant.

Digestion is not completed in the stomach; beyond it, the liver and pancreatic gland by means of their secretions overcome the acid reaction exhibited by the products of the stomach, and the food becomes alkaline once more. Fats are decomposed by a principle in the pancreatic juice not unlike that in diastase. The products are changed into sugar, and hence pass readily into the blood. They occasionally, however, undergo other changes such as are exemplified in the decomposition of milk. When that turns sour some of its sugar has become lactic acid. This is liable to change into butyric acid, which is one of the chief constituents of butter. In this we have a remarkable instance of the transformation of sugar into fat.

The colouring matter of the bile is a waste product. All colouring matter of the body is due to oxidation or deoxidation; and the analogies which meet us here are simple and instructive. Red is the characteristic colour of animals, and green that of plants. The two are complementary colours, and the two kingdoms, animal and vegetable, are the same. It was shown by experiment that by the addition of nitric acid the whole range of spectrum colours can be passed through by the colouring matter of the bile.

The products of digestion fit for nourishment are ultimately passed into the blood in a manner not quite understood, but probably by the aid of the lacteals which serve as go-betweens. The blood is a living tissue; it consists of cells which flow in a thick viscid fluid. These cells behave much like living animals; they feel, move, and are perfect amœbæ, living in the fluid part, or plasma, of the blood, which contains a little of everything belonging to the body.

The several tissues may, as regards their nutrition, be looked upon as a series of independent processes. Muscle, although it contains proteids, surrenders carbonic acid and not ammonia. To use an illustration, if we were to look upon the work going on in the muscle as upon that of a steam engine, carbonic acid would represent the smoke, and creatine the wear and tear. It always does the reverse of the plant; it sets free a certain amount of energy in the form of heat. This is proved by the warmth of blood coming from the muscle. The waste matter of the muscle must be removed, otherwise it proves a hinderance and a danger. In fact it would not only seriously impair the vigour of the living muscle, but it would actually poison and kill it. Liebig's extract contains nearly all the waste matter of muscle, but it must be distinctly understood that it acts not as a poison to the system, although it would certainly do so to the living muscle. However, in ninety-nine cases out of one hundred, poison is a matter of degree.

About the brain, spinal cord, etc., very little is known at present, especially as regards the exact nature of interchange existing between the nervous tissue and the blood. The former contains creatine, phosphorus in the shape of phosphoric acid, and ammonia. This constitutes a complex fat called protegon, found in places of secondary importance, such as the motor nerves.

The fatty tissue is a mass of protoplasm or cells. It is not necessary that fat should have been eaten to cause a production of fatty tissue; meat or amyloids will suffice. The pecularity is that each animal out of the same food manufactures its own kind of fat, such as lard, cod liver oil, etc. This leads to the belief that there is a reconstruction of fat probably taking place in the fat cells.

The living substances seem to be so much alike in plants and animals that a common name has been assigned to them in the term protoplasm. The characteristic difference between plants and animals seems to be that the former are constructive and the latter destructive. What is the nature of their common living sub-

tance, protoplasm, we know not. It can only be studied by that into which it breaks up. Proteids contain no phosphorus, yet there is no known protoplasm without it. Besides this it always contains protegon. There is no true protoplasm without sugar or amyloid material. Probably it contains three main food stuffs, viz., proteids, fats, and amyloids. Out of carbonic acid and ammonia the fungi manufacture this without light. If we suppose the amyloids to be arrested in the protoplasm of the plants, they would constitute cellulose or woody fibre; similarly in the animal we should obtain fat or oil.

There is individuality in every part of an animal body; its stamp is in every molecule, probably because it is built up afresh, and not merely another permutation of so many bodies. It is not, as it were, a house built of rooms ready bought, but a structure every brick of which was laid purposely for that particular design.

If for the diet of a normal man, proteids, amyloids, and fats are necessary, it becomes an interesting question to know what would be the exact proportions required of each. Pure experiments on this subject have not been yet begun, but observation and theory have established something in connection with the subject. On the whole we ought to be guided by instinct rather than by intelligence or theory. There are, however, points on which some light might be thrown. Working men, for instance, have a fondness for meat. Now, it is decidedly questionable whether this is an instinctive or an acquired taste. So much carbon is equivalent to so much fat, but that carbon need not be taken in the shape of meat. Besides, hard work has, after all, less to do with the muscular than with the nervous system. It is the heart which has to bear any extra stress from work. The muscles can hardly ever be tired out. It is the nervous system which tires. What the muscle is capable of performing is occasionally exemplified in the cases of madmen, or of a deer driven to death. In fact, an over amount of proteids is not as likely to produce muscle as to become a hinderance. Hence it is that exercise tends to the development of muscle; otherwise an increase of fat is obtained which unfits for hard work. Exercise and a normal diet will do more good than proteids in the shape of meat, etc. There is no evidence to show that mental work has any decided effect upon the waste of the body. The great energy of the system is really directed to keep the body alive, to maintain its temperature for instance.

In hot weather the body has to keep itself cool, and we drink in order to supply the insensible perspiration of the skin. There are, however, food stuffs especially fitted to be taken in warm weather,

on account of the great quantity of water which they contain. The Hindoo really eats rice to keep himself cool, the water being set free little by little in the system.

If the amount of work be diminished, the passive tissues gather fat. By an inverse operation we reduce fat. In the process known as "Banting" the metamorphoses are increased; fats and amyloids are avoided and proteids are taken. It may be remarked that some of the greatest evils regarding our constitutions are derived from our living at what may be called "high pressure."

The foregoing paragraphs must be looked upon as a compilation of a few suggestions and remarks which transpired during a course of eleven lectures on the subject. In his practical conclusions and illustrations, Professor Michael Foster desired not to dogmatise but to suggest.

E. H. Fournier.

There has been considerable discussion on the logwood test for alum in bread, as suggested by Mr. Horsley, of Cheltenham; and, according to the *Chemical News*, it has been tried in the following manner, by Dr. R. Carter Moffat, of Glasgow:—120 grms. of chips of logwood are digested in 8 oz. of methylated spirits for 18 hours, and then filtered. This solution, when brought into contact with bread or flour free from alum, produced a pale yellow or straw colour, but a dark red when alum is present. The process is, therefore, simply to apply to bread or flour suspected to contain alum, a portion of the prepared alcoholic solution of logwood.

The following interesting information about raisins is from *Borwick's Monthly Circular*:—The muscatels are the most highly esteemed, and are prepared by cutting the stalk half off that bears the bunch, when the grapes are fully ripe, and removing all leaves that can shade them, and allowing them thus to dry in the sun. These are called "raisins of the sun." The bunches are carefully removed and packed in boxes in layers, with a paper separating each layer. A more common kind, called *lexias*, is prepared by collecting the grapes when ripe, and dipping them into a lye made from the ashes produced by burning the branches of the vine. These are mostly from Valencia, as the preceding kinds are from Malaga—both from Southern Spain. A small black raisin comes from Smyrna, in Asia Minor. It is dry, and generally used for culinary purposes. Another variety, from Turkey in Asia, called Sultanas, is put up in drums, and although small, is delicious. What we call currants, from the Grecian Islands, are really raisins, and should be so designated. They are small seedless grapes growing on the islands of Zante, Corfu and Cephalonia, on the western coast of Greece. Wine is often made from the raisin, and is of the finest quality when carefully manufactured. The famous Tokay wine of Hungary is made from raisins. During the year 1870 there were imported into the United States 56,193 packages of raisins, of which 37,023 came from Southern France, Cette and Marseilles, 1,854 from England, 3,153 from Scotland, 1,620 from Germany, 50 from Sicily, and from all other ports 29,671.

CURRY.

Not many years ago—not longer, at all events, than may readily come within the recollection of the present generation—an eminent British nobleman, actuated by a spirit of benevolence, and a general desire to ameliorate the condition of the working classes, suggested curry powder as a panacea for famine. As it is quite within the sphere of the *Food Journal* to examine into and report upon all proposals of a similar nature, the subject cannot but prove interesting to many of its readers, although they may hesitate ere adopting the sanguine views of the peer in question. But what is curry powder? may well be asked by millions of our population who, if they ever even heard of it, certainly have had no opportunity of tasting the fragrant condiment and experiencing the zest and flavour which it imparts to an otherwise insipid meal. For their information our reply will be simple and short: it is a relish, and nothing more, though a great boon to the teeming multitudes of the East who exist almost on rice alone. True, curry is not a favourite with most Europeans at first; they have not been accustomed to its delicate aroma; they sometimes object to the bilious hue that it communicates to the food with which it is mingled, and are apt, from the force of prejudice, to associate the peculiar colour, complaint, and unamiable disposition displayed by some Anglo-Indians on their return home with its use. Without attempting to combat such prejudices, we think the most rational way to overcome them will be to throw all the light possible on the subject, and leave our readers to judge for themselves.

Proceeding to the East by the overland route, the traveller's first acquaintance with fresh Oriental curry may be said to commence at Suez. He may, of course, have had a species of introduction to it somewhere along the Mediterranean, at Alexandria, or in the desert at one of the railway stations; but it is not until he reaches Suez that he begins to taste curry—not until he has landed at Ceylon that he feels reconciled to curry—and most undoubtedly, not until after he has dined several times at Singapore that he is in a position to say with authority what curry is or ought to be.

As every one knows, Singapore is the first considerable halting

place at which the Peninsular and Oriental steamers call on their way to China, after leaving Galle, in the island of Ceylon. From its intertropical situation, this chief of the Straits Settlements rejoices in the production of all the delicate aromatic ingredients which enter into the composition of a high class curry, so that the powder, or rather paste, is to be had there in perfection.

It is amusing to hear, as the steamer glides along the pier at Singapore, the various remarks made by the people on board. The pilot, who has joined the ship some little distance off, is of course the paramount authority for the time being; and as he is supposed to be thoroughly posted up on every subject, he is the focus to which the most opposite and startling questions converge. "How about coals?" whispers the captain; "Have the tigers been nobbling anybody lately?" asks an old Anglo-Singaporean returning to the sphere of his labours with a young wife; "Is any prawn curry to be had?" remarks an officer connected with the diplomatic service proceeding to Japan.

To all these queries the pilot returns ready and courteous replies, and, as his answer to the last is eminently favourable, we land, in company with a scout of a pale gingerbread complexion in the employment of one of the hotel keepers. His master reclines on a cane woven chair, his heels resting on the broad arms, and he smokes a Manilla cheroot, whilst a scantily clad boy grimaces behind him as he drives away the musquitoes with a horse-hair switch. A gleam of gratified pride illuminates the landlord's saffron-hued countenance when he learns that the foreigners have travelled thousands of miles and wish to taste his celebrated prawn curry. But a moment's notice is scarcely enough; he feels and intimates that being so honoured he must have time to do his best, so he suggests a drive about the settlement for a time until the fragrant compound has been freshly mingled, when his gastronomic science will produce a dish worthy of the occasion.

Curry, to be in perfection, must have all its ingredients ground up together on the same day on which it is to be cooked. Various receipts are followed, each with a peculiarity of its own, but it should be remembered that the superiority of Eastern to European curry depends on the addition of fresh slightly acid vegetables.* In Ceylon a curry mixture usually consists of a piece of green ginger, two fragments of garlic, a few coriander and cummin seeds, six small onions, one dry chilli, eight pepper-corns, a small piece of turmeric, half a dessert spoonful of butter, half a cocoa-nut, and

* Acton's Modern Cookery, p. 227.

half a lime.* Should the curry be wished dry, the onions should be fried in ghee or native butter until brown, and along with the other ingredients ground into a paste with the addition of a little water.

To some Europeans the addition of turmeric might seem an objection, yet it possesses aromatic qualities† which render it extremely useful as an aid to digestion in people of languid habits and tardy circulation, so that it forms an important ingredient in all curry powders. Still, it should never be in excess any more than cayenne, the fault of most of our home curries, as in order to be in accordance with sound Apician principles no one flavour ought to predominate. Overcooking the meat, fish, or fowl employed as the basis of a curry is another error committed in this country, which is sought to be remedied by the addition of mushroom-powder,‡ a result, which it must be admitted, is partly obtained. Prolonged cooking injures the flavour of all meat by driving off the *osmazome*, which the addition of mushroom-powder again restores.

Dr. Royle§ in his essay on the Antiquity of Hindoo Medicine (p. 87) says:—"Turmeric is probably the Cyperus Indicus Dioscorides. Both he and Pliny state that the Indian Cyperus has the form of ginger and that, when chewed, it colours the saliva yellow like saffron. The word 'curcuma' is derived from 'karkum,' the Persian name for saffron. One acre yields about 2,000 lbs. weight. Five varieties are known in this market:— China, Bengal, Madras, Malabar, and Java. These are readily distinguishable from each other by their external appearance; but if they were sorted according to their resemblance, the China and Java turmeric would be placed in one group, the Madras and Malabar in a second, and the Bengal in a third. Its physiological effects are those of a mild aromatic stimulant." There are other features connected with turmeric, such as its employment for the detection of free alkalies in chemical manipulation, which, however, coming more immediately within the sphere of a medical periodical, are here omitted. Chilli, or capsicum, is another ingredient which, on account of its pungency, is likewise occasionally objected to at home; yet, in the East, the consumption is immense, both rich and poor employing the condiment at every meal. The capsicum belongs to the *solanaceæ*, or night shade family, of which, also, the potato is a member. There are four well marked species, all of which may be grown here, under glass, with a little care, but, like many other tropical

* Balfour's Cyclopædia of India, p. 512.
† English Cyclopædia, p. 347.
‡ Acton's Modern Cookery, p. 227.
§ Pereira's Materia Medica.

plants, whilst cultivation augments the bulk, it curtails the pungency of the fruit. The two best known descriptions are the *capsicum annuum* and *capsicum frutescens*. From the former we obtain pickled and dried chillies, whilst the latter yields the fiery and aromatic cayenne pepper of commerce, which usually reaches us in that condition, owing to the oleaginous character of the fruit rendering it difficult to preserve it by desiccation. For this reason, of all the ingredients which enter into the composition of curry powder as received at home, cayenne is the most liable to adulteration.* Its beautiful bright red colour gives it a certain value in the eyes of a purchaser, independent of, and in addition to its intrinsic merits; and this charming hue being fugitive when long exposed to light, red lead is added, which not only prolongs the tint, but, in adding to the weight, puts a fraudulent profit into the pocket of the retailer.† In the West Indies a liquor is concocted, for drinking before dinner, as sherry and bitters are occasionally used with us, composed of Madeira wine, sliced cucumber, shallots, lime juice, and a few pods of bird pepper, or chillies, the result being reckoned an unfailing stimulant to the appetite, and known by the uncouth name of *man dram*.

Coriander seed is familiar to every one, and may be seen growing wild in the neighbourhood of Ipswich, and in some parts of Essex. In common with most plants of the Umbelliferæ family, it is mildly carminative, aromatic, and stimulating, therefore a most important element in curry, of which it usually forms two-thirds of the whole ingredients.‡ When freshly gathered, the seed, and in fact every portion of the plant, smells like that of a well known repulsive insect with which all Londoners are more or less familiar, hence it derives its name from *kopis*, a bug, though when thoroughly dried the exhalation becomes pleasant and even grateful to the senses.

W. Cochran.

(TO BE CONTINUED.)

* Mitchell on the "Falsifications of Food," p. 272.
† Rhind's "History of the Vegetable Kingdom," p. 491.
‡ Encyclopædia Britannica, p. 367.

FOOD AND ADVERTISING.

The simplest notion of a journal is that it should contain literary articles and supply news. Still, even such a definition is far too wide for many distinguished journalists. Take up a French or Spanish newspaper, and there will be found brilliant literary articles, while the news department is on but a subordinate scale; it will contain that extent of political news which the necessities of the day compel, but of local, social, and individual news merely a scant quantity.

Now, if news be but an inferior and neglected element, mere prosaic advertisements scarcely exist, beyond the announcements of some charlatan, who has a better appreciation of human nature than the conductors of the journal. Advertisements are but the same thing repeated over and over again in the three hundred and thirteenth insertion in the *Times*, and are by no means equivalent to an article by Emile de Girardin, or a *feuilleton* by a Dumas. In English journals, either published on one side of the great seas or the other, the advertisements will appear, whether there be news or leading articles or not. Anything less brilliant than a backwoods or colonial bush journal there can scarcely be, and the advertisements of perpetual repetition attest the contentment therewith of readers and advertisers. The *Quarterly Review* cannot appear without a cumbersome weight of advertisements printed and stitched, and purchaser and postman must bear this extra burden, from which a *Revue des Deux Mondes* is free.

Do they do these things better in France, as they do some other things? This is a matter worth considering, because even a *Food Journal* is stuffed out with advertisements, and they are not all of the elegant class, the most embellished being the trade-mark of Liebig's Extract of Meat. In the *Times* are advertised coals and apartments and boys' schools—and one can understand this; and yet the French would consign these to the *Petites Affiches*, a contrivance by which there is a paper containing nothing but advertisements, only referred to by those who want it at the time of need, and which results in leaving the journals almost free from any such tribute to the necessities of existence.

The advertisements in the *Food Journal*, for instance, are de-

cidedly less interesting than the articles, but they may be read with a very curious result. They are a record of progress in food organisation. Such an announcement as that of Liebig's Extract of Meat chronicles a remarkable page in economical history. Here we have a great branch of trade newly sprung up, yet having reached a large supply, which affects the industry of the most distant regions, as it has contributed to the comforts of many. The invention of the German chemist, worked out in the bush of Australia, relieved the distresses of the besieged in Paris. An advertisement from Clifton Darling Downs, in Queensland, proclaims the superiority of the meat preserved "on the above celebrated estate of W. B. Tooth, Esq.," in 6 to 7 lb. tins, without bone.

Now, this brings us to something which shows that the English system, if apparently dull, is not wanting in intelligence. A competition is created in a new colony, which has but lately got its name, and barely had time to make that name well known. It is evident that, if we can excite the enterprise of the world, our task is in a fair way of being accomplished. A clever article is a very good thing, whether by Victor Hugo or Emile de Girardin; but if we printed it scores of times over, we should neither get it read nor recited till a new generation arose; and, if we did, it would become as monotonous and as nauseous as the perpetual chorus of praise in Zadig was found by the prince condemned to hear the same chant of glorification several times a day, with no remission. Repetition, Napoleon said, is the great figure of speech—"Repeat, repeat, repeat." So, too, it is, if people will submit to it, but they will not always. One good article is written about preserved meat, and it is read, and perhaps another, but after that the public are like startled fish, and the hook no longer catches. Thus the advertisement, which is to the article as a sprat to a whale, lives by repetition, and its small voice is heard when a greater attempt would hopelessly fail. This is trite matter to advertisers, for they live by investing their money in advertising. As in the Italian epitaph, what they spent they have, what they lose is what they save. Our concern, however, is with the philosophy of journalism, and the way in which a journal like the *Food Journal* is made to work out a public mission.

There is a very good article by Mr. J. Montgomery, at p. 200, on the capelin, and it has raised a desire in many to try capelin; but that desire will be forgotten, whereas a short monthly advertisement, "Capelin, capelin, capelin," would ensure fruition to the wish. Capelin! I read about capelin—it is to be got at such a place,

and I will get some to-morrow. To-morrow—the day of all others that seldomest comes—does not take the amateur to the capelin shop, but by-and-by there is the advertisement, which this time is a tinkling bell to conscience, and the capelin is experimented upon.

Condensed milk! Here is another great and new trade, and which, by-and-by, will add largely to the food of the world. On stations where beasts are boiled up for their tallow, milk goes to waste. Milk is not only wanted at sea, but in that vast growth of large towns which has outstripped experience and not yet reached its limit, milk, an article essential to the children, becomes less and less abundant. Just as cheese is now coming in from western cheese factories, so will condensed milk come in from Australian and Argentine condensed milk factories. The English condensed milk company work up "pure Aylesbury milk." Aylesbury milk is competed with in these islands by Mr. Newnham, in the county of Cork. Then one thing runs into another. There is a harmony of trade as there is a harmony of the sciences, though it has been depicted by no Mrs. Somerville. Aylesbury milk is worked up by the former company with cocoa.

The cocoa trade lives by advertising. It opens a wide field for various applications, such as Cadbury's Cocoa Essence, Fry's Caracas Cocoa, Rendall's Theobromine, Turner's Pure Chocolate Powder, Schweitzer's Cocoatina. It is this development of enterprise which is reacting in the cocoa countries. Venezuela, ruined by civil wars and repudiation, has employed a quick-bearing West Indian seed, and now finds that the quality of cocoa is deteriorated. Hence renewed attempts to restore the old quality of cocoa plantations.

Liebig is made purveyor for infants by means of Mellin's extract; and Maizena, which "makes such admirable puddings daily in the refreshment department of the Exhibition," must be considered as pudding food for children as well as for adults. When the Rev. Mr. Malthus had more believers than he has now, people were content to be horrified at the idea of the over-growing population, and contemplated with some seriousness a French discountenance of babies. We have since found out that the mission of Englishmen did not end with the peopling of North America, that the world is still wide, and that if we are to have men as emigrants we must feed the babies. To have strong men and women for workmen, sailors, soldiers, servants, colonists, we must have well-fed children. As we send out people to all parts of the world, so are we drawing in food from all parts. To make maize palatable is to lay open to the maize-neglecting population of England another granary as large as Europe, or larger. To make puddings is a small effort, but

to overcome prejudice is a great result. The Irish population would not eat rice in their famine, because they believed that it was given by the English to make their women barren. A prejudice against flavour may be as powerful in excluding a cereal from consumption, and if by delicious puddings people can be got to eat maize, then the proprietors of Maizena may make fortunes for many others besides themselves. It is only lately that English horses have been fed with maize, to the great relief of the oat market; and if some one had made Maizena for the horses, he would have lessened the pressure on the market for man's food. A Yankee in time of famine got his horses to eat shavings instead of hay by putting on them green spectacles, though the horses did not thrive on shavings as on hay. An ingenious person, Mr. Palmer, has thought that horses have appetites as well as men—as instanced by a horse enjoying the munching of apples;—so, as Mr. Gahn has got his Aseptine, and Mr. Batty and Mr. Whybrow their sauces—not to forget the celebrated Yorkshire Relish—Messrs. Palmer have invented a condiment for horses, at less than one halfpenny per feed.

Animals have to be fed, and eat much of the same kind of food as man, being obstinate as Irishmen as to the kind of food. If by a little attention during the Crimean war the army horses could have been made to relish the new food substituted for that to which they had been accustomed, thousands of them would have been saved, and the efficiency of the operations much increased. In feeding cattle for the market, the arithmetical aim is to fatten the beast at one operation with the smallest quantity of food, so as not to use food wastefully, or to do the same operation twice over. Ha'porths of condiment may be practical means for saving thousands of quarters of grain.

In the supply of food from distant points, transport is a great consideration; hence adaptability for transport is a quality necessary to the simple preservation of meat. The Victoria Meat Preserving Company, for instance, must have their manufactures so packed, that they can be handled from the time when put on shipboard until reaching the breakfast-table of the squire, or the dinner-table of the mechanic. The introduction of American cheeses has led to the supply of quite a different cheese package. Some trades cannot be carried on where there are no packers or coopers. The boxmaker is indispensable to the Smyrna fig-merchant. The preparation of the substance is no less important than the package. This is particularly the case in desiccated soup. Edward's process has reduced the bulk of

potatoes, though this is chiefly for sea-stores, while the desiccated meat can be brought from very great distances.

It is the same principle which is involved in the utilisation and transportation of subsidiary substances, less bulky than food, but indispensable in their preparation, as, for instance, Merten's Solid Wort, which is a substitute for the simple brewing stock of a farm. Malted Food Extract, again with the name of Liebig, provides for the distribution of malted food on a smaller scale, the malting of food for infants and grown people being advocated just like the malting of food for cattle. When a great house like Whitbread's puts people in mind of bottled beer, it shows how these firms recognise the relation between large establishments and vast consumption.

Except this beer of Whitbread's, which is old and good enough to have occupied wits and songsters for a century, everything here referred to is new; and it illustrates the important functions of the press in making known in a very humble way what is new among the millions who speak the English tongue. If the last English newspaper, or what figures as one, in Diamandina, or in Lima, or Alaska, be looked at, we may find in its columns Purvis's Patent Quinine Biscuits, or Batty's New Nabob Pickles, as surely as the last incident of war or revolution, or the last development of political or social progress in London or New York. Thus, while three or four clever Frenchmen write out a French journal, the English one is, in fact, the contribution of hundreds of less brilliant men, but of men, each in the distribution of labour, bringing his mind to bear on some element of progress. The hundreds of tortoises wear out and beat the few hares; and what is more homely and more practical lasts out in the long run what is most brilliant. In time, the leader of the great French wit and the advertisement of Frederick Gordon and Co.'s Wines, or of the Railway Passengers' Assurance Company—not to name again cocoa or preserved meat—become waste-paper; but though the one may have made a revolution and burnt down the labours of generations, yet the small efforts of the others will have steadily contributed to the cause of progress.

HYDE CLARKE.

AMERICAN GRAPES AND WINES.

The question of temperance is in America a political as well as a social problem, and excites some most intemperate discussions among our public men. The loudest and apparently most earnest party declares that total abstinence is the only temperance, and urges the enactment of laws which will force upon the people a practical exemplification of this doctrine. They have in a few localities got their laws, but never have been able to show, by a rigid execution of them, their Utopian schemes in successful operation. Intemperance is, indeed, a great evil in this country, especially among the poorer class in our large cities; but we look for regeneration in this particular rather to an abundant production of native wines, beer, and cider, than to prohibitory legislation, against which all high-spirited citizens rebel, whatever may be their views on the temperance question.

That wine will be an abundant product with us before many more years have passed, can hardly be doubted. The success of experiments already undertaken gives assurance of the fact. One enthusiastic producer in Missouri, a German by birth, goes so far as to predict that in twenty years "we shall rival wine-producing nations and export wine to all countries." Within the memory of comparatively young men, American wines were an unknown commodity, and grapes were raised only as a garden luxury; but already the fruit is a common article of food, and the wines find a ready market and are sold in considerable quantities. American grapes have not yet received the careful cultivation necessary to bring them to their full perfection in flavour and richness; and it is doubtful whether, with the greatest care for a succession of years, we have a climate which would bring them up to the standard of the fruit produced by the famous vineyards of Southern Europe. Most of the varieties now raised, both for the table and the wine-press, were originally found here in a wild state, and the fruit was small, harsh, and crude; even now, after some years of careful cultivation, many grapes are tainted with their original defects. Few kinds ripen well to the centre, but they generally have a hard core, the juice of which has a disagreeable acid and astringent quality. In a few varieties which have been longest under cultivation, this has nearly disappeared. As far as climate is concerned, it seems as though we had a suffi-

cient variety to bring to perfection almost any production which flourishes between the tropics and polar lines; but the fact is, that the Southern States, which have undoubtedly the best soil and atmosphere for the vine which the continent affords, have given little attention to this branch of industry. It is well known that prior to the late Civil War, the production of cotton so absorbed the attention of the people there, that little was done for the development of their resources in any other direction; and since that unhappy conflict commenced, now more than ten years ago, they have been able to do little else than obtain the absolute necessities of existence without going into experiments of any kind. The extreme Northern States are ill-fitted for the production of grapes, and the wine-producing interest can never make much progress either in New England or the north-west; although in Massachusetts grapes are cultivated to some extent in gardens, and one of the most common varieties, the Concord, originated there. The Concord grape has a large, dark purple berry, but is not well-fitted for wine-making. The other well-known kinds are the Isabella, Catawber, Iowa, Delaware, and Diana, the last three being the best for wine.

The first successful experiments in wine-making in this country were undertaken by the French and Swiss settlers in Missouri, Illinois, and Indiana; and the manufacture has extended throughout the western and middle states, and sprung up with surprising vigour on the Pacific coast. For many years the most popular of our native wines was the Catawber, of which our poet Longfellow sang :—

The richest and best
Is the wine of the west,
That grows by the Beautiful River;
Whose sweet perfume
Fills all the room,
With a benison on the giver.

Very good in its way
Is the Verzenay,
Or the Sillery, soft and creamy;
But Catawber wine
Has a taste more divine,
More dulcet, delicious, and dreamy.

Mr. Nicholas Longworth, of Cincinnatti, had for many years a pre-eminence in the west for the production of this beverage; and his still and sparkling Catawbers are highly prized, though other brands have now displaced them from the first rank in the popular estimation. Wine-making has been carried on to quite a large extent in New York State for some years past. At Syracuse there

is a vineyard of ten acres, on which five varieties of grapes are produced, the Isabella, Concord, Clinton, Delaware, and Diana. The production of this vineyard last year was about 4,300 gallons of wine, which sold at from $2 50c. to $3 per gallon. At Crolon Point and Iona Island, on the Hudson river, there are also large vineyards.

But California is after all the great wine-producing section of the country; and since the gold fever in that state subsided some dozen or fifteen years ago, it has been found that the richest treasures of her soil are not after all her precious metals, but an apparently unlimited capacity for producing the best fruits and grains of the warm temperate climes. What is said to be the largest vineyard in the world is the Buena Vista Estate, near Sonoma. It contains 800 acres, of which 450 were last year under actual cultivation. The vintage season is from about the middle of October to December, and during that time some 100 Chinamen are employed in the harvest. The production of this vineyard last year was 126,000 gallons, besides 40,000 bottles of what is called California Champagne. From 700,000 to 800,000 gallons of red and white wines were manufactured at Anaheim, Los Angeles County, and 300 to 400 boxes of raisins were made. The making of raisins was regarded as an experiment, but proved entirely successful. There are several popular and well-known brands of Californian wines in the market. Angelica is a very light, sweet wine, which is sold by the producers at from $1 to $1 25c. a gallon. California Hock is a light, white wine, sold at 50c. to 75c. per gallon; there are also sherry, sweet muscatel, port, claret, champagne, and grape brandy. This is rapidly becoming an important interest in the industry of California. There are upwards of 25,000,000 vines under cultivation in the State, and over 6,000,000 gallons of the various wines, and 500,000 gallons of brandy, are produced annually. The average production of grapes in California is 8,000 pounds to the acre, while in France it is but 3,000, and in this country, east of the Rocky Mountains, 5,000 pounds in the most favourable localities. In many cases the vineyards yield $500 or more per acre, over and above all expenses.

In our Southern States this branch of industry has been so far totally neglected; but there is every reason to suppose that when the political condition of that section of the country shall become entirely settled, and labour and capital work harmoniously, grape culture and wine-making will receive attention, and become one of the prominent industrial interests.

With regard to the production and consumption of our native wines, there remains little to be said. They have not the richness or

flavour of the best European brands by any means, and their price in the market is generally less than half that of the imported article. One consequence is, that they are not so much used at expensive entertainments or on the tables of the aristocratic and wealthy, but are becoming more a common beverage, which is in itself a good sign. Could the wine-producing capacity of the country be fully developed, and a national beverage made, which, if inferior to imported luxuries, is still wholesome, there would be less drinking of those fiery liquids which are such a curse to our people, and less occasion for the clamours of indiscreet, though well-meaning, advocates of total abstinence.

There is, of course, in the manufacture of American wines more or less adulteration and fraud. What is supposed to be real champagne is quite a common drink among certain classes here, but we are told on competent authority, that the genuine article is sent to the United States but sparingly. Probably more wine is made in the State of New York alone, and sold under the name of champagne, than is produced in all the famous district of France from which it receives its name. The juice of the Iowa or Delaware, or even the Concord grape, is prepared to resemble, as much as possible, the French wine; and then carbonic acid is forced into it by machinery to give it the expected sparkle and "fizz." Brandy and sugar, rhubarb, elderberries, and a variety of other articles, are also used to adulterate and increase the bulk of wines. Of course such practices will prevail, to some extent, until the dawn of the millenium. The price of native wines at our restaurants and hotels varies from $1 to $2 per quart bottle, according to the grade, while foreign wines are set down at two or three times the amount. According to an analysis of several specimens made under the direction of the Commissioner of Agriculture at Washington, the average American wine has a specific gravity of ·9906, and contains 9·76 per cent. by weight, or 12·18 per cent. by volume, of alcohol; ·05 per cent. grape sugar; 1·70 per cent. of acid (tannic and gallic); 1·84 per cent. of extract; and ·26 per cent. of ash.

A. K. Fisk.

Palatable Oils.—Messrs. Fox and Co., of Manchester, may fairly claim to be public benefactors, inasmuch as they have robbed castor and cod-liver oil of their terrors. We know of few things more hateful than the anticipation of the matutinal dose of either one or the other, causing us to wake up with the taste in the mouth, even before the dose is swallowed. But Messrs. Fox have succeeded in making a nasty medicine, if not nice, at all events bearable, and that too without in any way destroying its efficacy.

ADULTERATION IN ITS MORAL ASPECT.

In my last paper, having placed on record the fact that, with loud sound of trumpet, a society or company was a few years ago originated for the purpose of honestly supplying articles of food and drink, I ventured to ask if this admirable company had yet a local habitation and a name; whether it still existed, or whether, like many another noble undertaking, it had been strangled in the birth, or died of mere pecuniary inanition; in short, whether anyone had ever heard of its practical operation, or knew any thing at all about it? From the fact that a "Pythagorean" silence has since reigned, and still reigns, on this interesting question, it is with reluctance, as well as with astonishment, that the conclusion is forced upon us that "net profits of at least 15 per cent.," *plus* the satisfaction of honest trading, did not hold forth to the British capitalist sufficient inducements to go out of the beaten track for the "reparation of a great social evil," and the reaping, in addition, of a golden harvest from the monetary seed invested. There is something very mournful in this fact; not only mournful, but discreditable; not only discreditable, but astounding. "Honesty," we used to be told in old-fashioned times, "is the best policy." It is a policy which is not only pleasant, but is found to *pay*. Surely there must be some mistake about this once popular axiom. Judging by facts it would appear that, let honesty be as profitable as it may, yet dishonesty is infinitely more so—especially when not found out. It cannot be otherwise. Else would not that same mighty company with its 100,000*l*. of capital, its long roll of respectable names, its influential directors, able officers, general manager, chief analyst, etc., be still in flourishing and honoured existence? We may take it, then, for granted that dishonesty in the vending and preparing of every kind of food is not only an established fact throughout the territories of "fair-dealing England," but is tacitly approved of by all concerned in it, and tolerated by those at the head of affairs.

The question of adulteration of food viewed under its moral aspect, not in a loose and general manner, but so as to bring it home individually to the offenders, becomes more and more important, more striking, more convicting, if one can use such

a term. It is said that those engaged in political struggles, however honourable in their private character and individual capacity, when once within the vortex or borne along by the stream of party strife, or of ambition, contract a certain looseness of ethics and morality in all that belongs to public affairs, which they would scorn in their private transactions. This, however, is a measured evil compared with the demoralising effects which indulgence in that form of robbery, which is veiled under the insidious term adulteration, cannot fail to produce on those who are guilty of it. The human heart, deceitful above all things, and desperately wicked, is never so deceitful as when biassed by self-interest, and supported and sanctioned by the example of others. Habit, too, we know, is a second nature. Some have even gone so far as to aver that it is stronger than nature. How powerful then must be the combined influence of habit and self-interest in perverting from the plain open track of honesty! Conscience becomes deadened—the judgment blinded. The pious grocer who could not overlook the absence, even for a few moments, from the family devotions of his well-ordered household, of a too zealous apprentice, at once and benignantly pardoned a delay which originated, not in mere wantonness or irreligion, but from the fact that the truant *disciple* was too busily occupied in "sanding the sugar" to think of less important concerns. The apprentice was right in his excuse; the master was right in admitting the excuse. He had been taught that this branch of adulteration belonged to his daily avocation. He had been no true apprentice to have neglected, the grocer had been no true master to have overlooked the neglect of, a duty so paramount—so profitable moreover.

Do we think that conscience ever pricks these defrauders of their friends, neighbours, and relatives? Let us consider what a hardy plant conscience is. So long as the legend is to be seen plainly inscribed (in characters of brass) over every shop door down his own street, and in the next and the next, "I am no worse than my neighbours," is it likely, save in moments of urgent and supreme peril, that the "gentle monitor" can make itself heard?

Seeing, then, that the system of business so frequently pursued by retailers of articles of food is a dishonest one, as proved not only by evidence before a committee appointed by Parliament, but also by daily experience; seeing that the root of the evil is so deeply planted, and its branches so widely spread as to cause neither shame in those who are guilty of it, nor surprise in those who suffer from it; seeing, moreover, that hitherto no exposure on the

part either of the press or the medical profession has in any material degree checked its growth, is it not to be regarded as one of those mysteries, of which there are many in this country, that no member of the Government, no independent member of the House of Commons, no peer of the realm should have persistently brought the whole question of Adulteration before the consideration of the nation? Save in America, there is no other civilised country where the evil exists to anything like the same extent as it does among ourselves. Even the public seem resolved to shut their eyes to the frightful abuse, or to content themselves with grumbling from time to time, and using harsh expletives whenever any glaring case is fairly brought to light. "We cannot but add," says an earnest writer,* "that if ever men deserved well of their countrymen, it is those eminent and indefatigable individuals who, by bringing to light such an atrocious system of fraud, have done something at least to save the health and pockets of their countrymen, and to check, by shame, the failing morals of English traders, whose reputation has hitherto been held up to the rest of the world as the very pink of honesty and honour." This is certainly true; and how much better, how much more patriotic would it be, if the legislature would take up this subject, than which none can be more important, than to wrangle night after night on questions which are either merely speculative, or at least are of questionable benefit to the people at large. Wholesome food means prolonged life and a healthier population; while, as to the morality of the question, the *compulsory* honesty of one generation might reasonably be expected to beget voluntary honesty in those which are to follow; and, judged by public considerations, fair dealing, even if compelled by Act of Parliament, would be infinitely preferable to the "atrocious system of fraud" which is, and has so long been, winked at by successive governments, and for which government is therefore most assuredly, in a great measure, responsible.

J. Montagu Sims.

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* W. D., in the preface to "Is Killing Murder?"

SUGAR.

The quantity of sugar used in the United Kingdom is steadily on the increase, and, with the exception of the United States, the amount consumed per head of the population is greater in this country than in any other part of the world. In the year 1870 no less a quantity than 710,000 tons were entered for home consumption; and as sugar now takes such a prominent place as an article of food, even in the homes of the poor, it may not prove uninteresting to give a few particulars of the history of sugar cultivation, and the method of manufacture.

In India and China sugar appears to have been known at a very early date, but its introduction into Europe took place about the 12th century, when the Crusaders caused Europeans to become more intimately acquainted with the productions of the East. Before the 15th century there appears to have been no record that anything but cane juice was known, and the first people who turned their attention to concentrating the cane juice were the Germans. Strange it is that the sweetness of other plants and fruits appears to have been overlooked for many years, and until a comparatively recent date it was thought that sugar existed only in the sugar cane. In the year 1747 a German chemist proved that sugar was generally diffused throughout the vegetable kingdom, and that amongst plants the root of the beet stood high as being particularly rich in sugar. Hence arose the manufacture of beet-root sugar in Germany, an industry which has since extended to France, Belgium, and other European countries, and the subject is now engaging the attention of the agriculturists and sugar refiners of this country.

The cultivation of the sugar cane seems to have been perseveringly carried on in the West Indies from the date of its introduction from Madeira in the 16th century up to the present date. The climate was found to be particularly suited to the growth of the cane; and agriculturists in those islands, and on the adjacent mainland, cultivated the cane with such success that sugar soon became the staple product of manufacture, and has so continued to this day.

The sugar cane (*Saccharum officinarum*) was originally a native of the East Indies, and of it there are many varieties. That called

the Creole cane appears to have been the original variety introduced into the West Indies, but the Otaheite cane is now more popular, as it is of more luxuriant growth and richer in juice.

Of late years the number of trees and plants placed under tribute for the production of sugar has much increased. Thus, in North America the sugar grass (*Sorghum saccharatum*) is now extensively cultivated. In India several species of palms produce much sugar, which is known in the English market as "jaggery," and in Canada and North America the sugar maple (*acer saccharinum*) furnishes a juice rich in sugar.

In a popular paper it is quite out of place to speak scientifically of the several processes of manufacture adopted for producing from cane juice the different kinds of sugar at present in use either for direct consumption or for refining purposes. A general outline only can necessarily be given, and it is proposed afterwards to write more particularly of the sugars refined in this country, especially as they are most commonly used; moreover, the properties of some of these refined sugars are not as well known to the public as they ought to be, or the lower kinds would not so generally be used as substitutes for raw sugar.

In preparing sugar from the cane the whole process may conveniently be divided into two parts, viz., the separation of the juice from the cane, and the crystallisation of the sugar in the juice.

To obtain the juice from the cane is a simple process enough. The canes when moist are placed in a mill, and the juice is expressed by powerful machinery. Much juice is left behind in the canes, and it is stated on good authority that of 16 per cent. of sugar naturally present 12 per cent. only is extracted, the remaining 4 per cent. being locked up in the canes and burnt as fuel for evaporating the juice. 25 per cent., therefore, of the sugar that might be obtained by more careful manipulation is consequently lost, and from this fact it will at once be apparent that if the method of extraction were improved, the price of sugar would be much below what it is at present. The great drawback to the improvement of the sugar manufacture in the West Indies seems to lie in the fact that water power is difficult to obtain, and steam power is too expensive for the small planters, on account of the high price of coal. Lately a strong feeling has sprung up amongst the planters in favour of central sugar factories, of sufficient size to enable the proprietors to use profitably the best machinery, and they hope that, by a combination of capital and skill, sugar will be produced of a better quality than at present, and at a lower price. Many difficulties have to be overcome before this method of work-

ing can be a genuine success; but if the planters are in earnest all obstacles will eventually be overcome, and this system of centralisation may prove of great benefit in still further developing the sugar trade of the West Indies.

The concentration of the cane juice for crystallising the sugar therein requires most careful management; and it is by the neglect of certain precautions that some of the raw sugar imported into this country is quite unfit for domestic purposes, or even for refining. Thus, for instance, the "jaggery" sugar before mentioned is almost black, and is prepared simply by boiling the palm juice over an open fire, stirring it from time to time with a stick, and when the juice is thick enough it is allowed to cool and the sugar to crystallise. Two great difficulties to be overcome by the successful manufacturer are due to the fact that cane juice naturally contains substances exceedingly injurious to the sugar, and also that at a high temperature cane sugar itself is rapidly decomposed. The juice when expressed from the canes is like dirty water, and if left to itself for only a short time, at a tropical temperature, it ferments, becomes acid, and is thereby permanently injured. To prevent fermentation, the juice, as soon as expressed from the canes, is at once boiled with lime, which substance has the property of clarifying it and coagulating the easily decomposable matter. When it is clear, it is at once drawn off from the scum and put into the first of a series of six or eight pans placed in a row. A fire is put under the last pan, and as the chimney flue runs under the whole series, the heat is sufficient to boil the juice in the last two or three, and to heat strongly the remainder. As the juice gets heated in the first pan it is removed into the next nearest the fire, and so on throughout the series, care being taken that whenever any scum rises it is at once removed. By the time the juice has reached the last pan of the series it is considerably concentrated, and after being boiled to a proper consistence it is placed in casks to cool and crystallise.

When the crystallisation is completed, the bung of the cask is removed to allow the uncrystallised sugar or molasses to drain out into a trough. In practice it is found that even with the greatest care all the molasses does not drain off, and in almost all hogsheads of such sugar imported, a certain portion of the contents consists of a mixture of sugar crystals and molasses, which mixture is sold in this country under the name of "foots." Sugar allowed to crystallise in casks is generally too dark in colour for domestic purposes.

Planters, of course, soon found that dark coloured sugars were not

in favour in the European markets, and therefore turned their attention to the production of light coloured sugars. By the aid of a little chemical knowledge they learned what was the cause of the sugars darkening when the syrup was boiled for any length of time at a high temperature. After the cause was known, the discovery of a remedy was not difficult. It was found that at the high temperature at which the sugar syrup was boiled, a portion of the cane sugar was decomposed and converted in the first instance into fruit sugar, then into grape sugar, and finally into caramel or burnt sugar. The latter possesses high colouring properties, and this property is turned to account in the kitchen, burnt sugar being much used for giving a dark colour to gravies.

From the fact that boiling at a high temperature darkened the sugar syrup, it was self-evident that the only way to remedy this defect was to strive to invent some method of concentrating the sugar at a low temperature. This operation is now effected with ease by the aid of the vacuum pan, an apparatus which has conferred untold benefits on sugar planters and refiners. It is made both air-tight and steam-tight, and consists of a copper vessel something like an ordinary still, to which is attached an air pump, worked by suitable machinery. The pump is made to remove the air from the surface of the sugar syrup, thus creating a vacuum, and by this simple contrivance the boiling point of the syrup has been reduced from about 230° F. to 130°.

The syrup, after having being boiled down to a certain extent, is put into the vacuum pan. Through a strong pane of glass on the breast of the pan the operator notices the condition of the syrup, and from time to time takes a sample from the sampling apparatus, to see if it is sufficiently concentrated. When this point is reached, the syrup is removed into suitable vessels to crystallise. These vessels are conical in form, and are termed "forms." When the crystallisation is completed, the plug from the bottom of each form is withdrawn for the escape of the uncrystallised sugar. These drainings are again put in the vacuum pan, but the second product is much below the first in quality. The operation is repeated until no more crystals of sugar can profitably be obtained. This general class of raw sugars now described is called "Muscovado."

R. Bannister.

[TO BE CONTINUED.]

THE PROGRESSIVE PHYSICAL DEGENERACY OF OUR TOWN POPULATIONS.

[Read before the Social Science Association, at Leeds, Oct. 10, 1871.]

In the *Pall Mall Gazette*, about two months ago, appeared the following statement:—

"As a matter of fact there can be no question that from some cause or other the physical type in England has degenerated of late years. Broad chests and powerful limbs are no longer the rule among labourers and artizans, and every recruiting sergeant complains that the doctor rejects every year a larger proportion of the men examined by him, and even those admitted into the ranks are very inferior in bone and muscle to their older comrades."

A month afterwards, "our own correspondent" of one of the leading London journals, when reporting the assemblage of troops for the autumn manœuvres, thus describes the arrival of the Militia at the Aldershot camp:—

"To-day there was a better opportunity of observing the general physique of the men. The youthfulness and want of bone and muscle were greater than I had thought. Many of them looked no more than sixteen or seventeen years of age, and were conspicuous for their narrow shoulders and shallow chests; their arms and knapsacks seemed quite as much as they could carry, and more than was good for them. After a careful examination one may justly state that the militia here do not represent the crack corps of our reserve, and must not by any means be taken as more than an average sample of the whole. How they will bear the fatigues before them remains to be seen; but though they will undoubtedly improve, their stragglers and sick list will be painfully apparent."*

Now, I take these merely as specimens of numerous statements which have appeared of late years, in general as well as in scientific periodicals, affirming a diminution in the physical strength and soundness of the men who enlist into the army, and especially into the militia.

It is difficult to extract any positive information from the Army Medical Reports, relative to the increase or decrease of the proportion of recruits who are rejected by the examining surgeons, whether civil or military, on account of physical incapacity or infirmity. But there are some facts which lead one to infer that, of late years, that proportion has increased.

To Dr. Beddoe, President of the Anthropological Society, the country is much indebted for original researches into the stature and bulk of men in these islands. His valuable memoir on the

* *Standard*, Sept. 7, 1871.

subject, and his recent paper read at the British Association, taken in connection with the Army Recruiting returns, seem to establish the inference that our countrymen are on the whole degenerating, and that the cause thereof is to be found chiefly in the increasing concentration of the working classes in towns, in the depressing circumstances of town life, and in the larger number of those engaged in indoor employments.

The same gentleman has lately favoured me with a *resumé*, by Dr. Gordon, C.B., of the Statistics of Recruiting for several periods. The per-centage of rejections during three periods, is said to be as follows:—

For the first period, one of peace.

1835-7,	in England	32·7
	in Scotland	35·9
	in Ireland	25·3

For the second period, during the Crimean and Indian Wars.

1854-9,	in the whole kingdom	24·2

For the third, another period of peace.

1864-6,	in the whole kingdom	38·7*

Now, comparing the third with the first of these periods, both times of peace, there appears to be a marked increase of rejections.

Of course the per-centage rejected depends very much on the urgency of the demand for soldiers and on the state of the labour market. Dr. Beddoe asserts from his own knowledge that many men were enlisted during the Crimean war who were not fit for a day's active service.

For the last two years, according to the Army Blue Books, there has again been a slight decrease in the number of rejections, but not sufficient to affect the conclusion that in thirty years the rejections have increased at least 6 per cent., probably 10 per cent.

Although Dr. Gordon does not separate the Irish and Scotch rejections from the English, in the latter periods, it appears that fewer Irish and more Scotch are rejected than English. "But then the Scotch recruits are almost all townsmen; the peasantry do not enlist as they do in England."

Dr. Morgan, in an able paper on the Deterioration of Race in Great Cities, read at Sheffield in 1865, states on good authority, "that in some of the manufacturing districts, four out of every five, sent up by the sergeants for medical inspection, are rejected on the ground of physical disqualification."

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* Dr. Parkes gives the rejections for the three years preceding the last-mentioned period as, 29·3, 40·1, and 44·1.

I am not about to enter upon a debated question—namely, the degree of security to the army service afforded by primary inspections made by civil surgeons as compared with those made by army surgeons. Mr. Ikin, of this town, read an excellent paper on the Examination of Recruits, at Oxford, in 1868; and he may be able to inform us whether, in his opinion, the proportion of the population fit for military duty increases or decreases. On the whole I gather from his paper, also, that rejections are on the increase.*

To myself, as to Dr. Beddoe, this seems a most momentous question, involving the gravest consequences to our national safety.

"The late Franco-German war," he says, "has opened the minds of many to the necessity of investigating and confronting the facts of the alleged degeneracy, by once more demonstrating that victory marches with the armies of those whose physical (as well as moral) organisation is superior."

Surrounded as the British Isles are by powerful, and not always scrupulous, military nations, our very existence, as a great and free people, may depend on the physical excellence of those who are to constitute our army of protection and defence.

It is hardly to the point to reply that the volunteer movement and the greater encouragement of athletic sports, are vastly improving the *physique* of townspeople. I grant this as regards the upper and middle classes. But the defence of the country ought not to depend on a comparatively select body. If the masses of our labouring population are becoming, as I fear is the case, thoroughly debased in form, in muscular power, and in habits, it is not to be expected that the picked men of the country, the vigorous and energetic thousands of the well-to-do classes, should risk their lives, even in a defensive war, unsupported by the millions of the lowest class.

What then are the principal influences at work to create a lower type of Englishmen?

They may, I think, be classed mainly under three heads—Food and Drink;—Labour and Employment;—Residence and Dwellings.

I. *Food.*—Whilst the rate of wages has, on the whole, greatly increased during the last thirty years, the price of provisions, at least in the south of England, has increased as largely. Bread is not cheaper than it was thirty years ago. The cost of wholesome meat has nearly doubled, and more diseased meat is sold to the poor. Vegetables are decidedly dearer and scarcer, and the pro-

* The statistics of militia recruiting, if they could be obtained, would, I think, supply a more reliable test of the bodily vigour of the lower classes in different localities than those of the line.

portion of the working classes growing their own vegetables is, I believe, on the decrease; in towns certainly.

Then, as to the use and preparation of food, the gross ignorance of domestic economy and of cookery among the poor is deplorable. As a greater number of women are employed in manufactures, their incapacity in this respect becomes more absolute and hopeless. This most important branch of female education is, as a rule, wholly neglected in elementary schools, nor do I perceive any signs of greater attention to the subject under the new school boards. That the masses, especially the infantile and growing population, suffer severely from this ignorance, cannot be doubted.*

Perhaps the most serious and destructive change in the nutrition of the poor is their almost total privation of milk. Infantile sickness and mortality depend largely on this want. Here again, the occupation of mothers in factories and workshops deprives many thousands of infants of their natural food, breast-milk. Cows' milk in large towns, even diluted and adulterated as it is so largely, is hardly tasted by the very poor. Even in grazing rural districts, where cheese and butter are manufactured, milk is not to be had for the families of the labourers. The very buttermilk is wanted for the pigs. It is not too much to say that half of the children of this country are now reared without milk, and this fact of itself would be enough to account for a deterioration of race. No one who has examined Dr. Edward Smith's dietary reports can doubt that the physical superiority of the peasantry of Scotland, and of large tracts of our own northern counties, depends mainly on their diet of milk and oatmeal. For this wholesome and invigorating food, the substitutes throughout the greater part of England are impure sugar, swarming with *acari;* tea leaves, first used by the Chinese, then dried with gum and all sorts of abominations; greasy and acescent slops; indigestible cheese; and sour, aluminous bread. Debased and improper food is not only a main cause of general debility, but it may account especially for the decay of teeth, which is, doubtless, advancing with our boasted civilisation.

H. W. Rumsey, M.D.

[TO BE CONTINUED.]

* The principles of plain cookery might be practically and profitably taught, if public kitchens were opened for the supply of nutritious, cheap, and well-prepared food to labourers and artisans.

IRRIGATION AND FOOD SUPPLIES.

THE history of the world from one point of view is but a history of the rise and fall of nations—the development of the resources and exhaustion of the riches of countries; at one time rising to the highest pinnacle of wealth, and anon falling away into a position of dependence. With the increased facilities of communication now at command not only are such fluctuations of prosperity scarcely probable, but the rapid increase of population in every quarter causes greater and more urgent demands upon the produce of every soil, and is gradually leading to the cultivation anew of lands which have for centuries past remained barren and waste. Instead, then, of seeing countries waning in their prosperity, the restoration of all lands to their natural powers of productiveness is gradually taking place, tending to the development of such a combined amount of wealth as the world has never previously witnessed. It is of course desirable that each land should, so far as may be practicable, grow its own food supplies. This is easy enough where the population is small in proportion to the area of a country. But where the opposite prevails, a high state of cultivation is required in order to make the land yield a heavier and a greater number of crops than it will do in its natural state; and this is all the more necessary, as where population is in excess, and land consequently dear, larger returns per acre are necessary in order that the cultivation of the soil may become a profitable undertaking.

However highly land may be enriched by ordinary or artificial manures, moisture is absolutely necessary in order to bring the crops to maturity. It is true that wheat and some other grain crops will flourish in this country with an extraordinarily small amount of rain-fall, as we witnessed in the season of last year, but wheat constitutes only a small portion of our food supplies, and it is also perhaps the very one which is most easily supplemented by importation from abroad. It is, however, the abundant provision of animal food which is the most important question to be considered, and this is entirely dependent so far as home production is concerned upon a good hay harvest and an abundant root crop, in the absence of which keep becomes scarce and cattle are hastily sold off at an early season, and often when they are scarcely in a fit state for the purposes of meat supplies.

The throwing of a large quantity of stock suddenly upon the market, at a season of the year when the consumption of animal food is least, may have the effect of temporarily reducing prices, but it is invariably followed by a sudden and serious rise in the value of meat during the winter and spring months. The connection between the various food markets is also so intimate that an extraordinary increase in price in one is almost sure to be communicated in a greater or less degree to the others, thus causing a general dearness in all classes of provisions. The great economic question for consideration is, therefore, how to ensure ourselves against the failure of those crops which constitute in reality our principal sources of food.

The fertilising effects of water are far in excess of what is generally believed. Whilst credit is as a rule given to various descriptions of manure for restoring the exhausted energies of land after a crop, it is too often forgotten that manure can be of but little or no value unless assisted by water, which invariably forms the medium whereby the useful chemical properties that alone stimulate growth are conveyed from the manurial basis, whatever it may be, to the earth, and from the earth are communicated to the plant. It has been often, but erroneously, assumed by persons not fully conversant with the effects produced by irrigation, that too large a quantity of water thrown over the land must tend to wash away the nutritious properties contained in the soil, more especially if they have been introduced artificially with manure. This argument has been relied upon to a great extent by the opponents of sewage irrigation. A few moments' reflection will, however, soon dispel any such fallacious impression. The annals of Eastern countries such as India, China, Egypt, and in Europe, of France, Italy, and Spain, contain abundant evidences of the fertile properties of water. In parts of Scinde, along the banks of the Indus, sandy wastes have been converted into rich gardens merely by the application of water in sufficient quantity to the soil, and similar enrichment by the means of water alone has been witnessed in all countries where irrigation has hitherto extended. If, then, water by itself can add to the productiveness of land, it is, to say the least, somewhat paradoxical to assert that it can impoverish the soil.

In saying this, it must be borne in mind that we refer only to lands properly prepared for irrigation—that is to say, laid out and thoroughly drained; for it is a well known fact that if water be allowed to stagnate on land, it is at once rendered quite unfit for agricultural purposes. The effect of water upon the fertility of

land is dependent upon a chemical combination which is entirely distinct from any mechanical action, and hence the superiority of rain over spring water for irrigation purposes, for the latter having already been in contact with one or other of the various kinds of earth, has parted with its fertilising elements and absorbed other properties not of the same agricultural value, according to the nature of the stratum from whence it has been drawn. By long exposure to the atmosphere, however, several of its former useful properties are recovered. Hence it is found that rain is the best fertiliser of all water; next comes that taken from rivers and streams, and lastly spring water.

It may perhaps, and not without some reason, be asked, How is it that irrigation should be considered necessary now in England when we have done so well without it heretofore? In order to answer this question fully and satisfactorily, it will be necessary to consider for a moment what has led to the introduction of irrigation in other countries. Of ancient works of this character little is known, but the earliest were evidently wells for the simple storage of water. These were probably first constructed in places distant from rivers, and their necessity before the introduction of pumps can be well understood. Then followed wells supplied by springs, tanks for the storage of water in convenient localities on the surface of the ground, and lastly canals. These latter were evidently first constructed with the view of conveying water by means of gravitation to localities away from the immediate vicinity of streams, and there appears to be no small probability that artificial water channels were first introduced for the purpose of watering the gardens attached to Kings' palaces, and to the residences of wealthy and powerful nobles. Circumstances have, however, considerably altered since the time when irrigation canals were used as luxuries. They are now necessities, and in connection with them another important measure is the storage of water.

Trees have a very important effect upon rain, and any undue destruction of forests has always been followed by a diminution in the amount of rainfall. In former years, before forestry was cultivated as a science, the timber-growing lands were quickly cleared and their products used as fuel. Not only did this policy result in a reduced amount of rainfall, but the removal of the roots of trees which facilitate the passage of rain into the ground, and the destruction of brush and low growing bushes which flourish under the shade of forests and woods, and which also prevent water from flowing away over the surface of the ground, have naturally tended to reverse an important provision of nature, and the rain as it falls rushes

directly into rivers, causing floods at one season of the year and drought at another.

Although England, owing to her vast resources of fuel in the shape of coal, has not similarly disturbed the influence on rainfall due to the proportionate extent of her forest districts, she has nevertheless, by deep and thorough draining of cultivated lands, done much towards destroying the natural flow of water through the soil towards rivers and streams, thus causing, similarly with forest destruction, a tendency towards violent and sudden fluctuations in their volume. In navigable rivers this is partly remedied by the construction of weirs and locks which convert them actually into a succession of ponds whose depth is regulated by the height of the sluices at each weir. This, however, is barely sufficient for the purpose, and in order to retain the excess supplies which fall at one season, for use in times of deficient rain or drought, reservoirs should be enclosed within the water-shed of every river, the contents of which would serve to supplement the stream whenever necessary.

Thus, then, does ordinary land drainage affect the natural distribution of rainfall water, and it is a question yet to be determined whether the diminished amount of evaporation from the surface of the soil may not have some influence upon rainfall itself by disturbing the laws of Nature in a manner not altogether dissimilar to the reckless destruction of forests, and necessitating resort to artificial means in order to restore the desired equilibrium. With the foregoing brief explanation as to the necessity for artificial irrigation, we may now proceed to notice more particularly its effects upon crop cultivation.

No one can have failed to notice the richness of pastures situated in valleys, and more particularly such as lie on the banks of streams. It is impossible to mistake the cause which leads to such meadows being so much richer in their produce than the pasture of lands situated on hill sides or at high elevations, and it is simply owing to the greater amount of moisture upon the former than is enjoyed by the latter. No further argument than is supplied by nature seems necessary to prove the fertilising property of water when applied to grass lands; and as grass, either fresh or in the form of hay, constitutes the principal food for our cattle, it follows that by promoting its more prolific growth we are practically adding to the means of supplying an increased amount of animal food. Where water can be obtained readily and brought to the spot by gravitation nothing can be more easy or beneficial than simple irrigation. Sometimes, however, lands lying beyond the

reach of water by such simple means may be irrigated with the assistance of an engine for raising the water to a sufficient height, and this, as it flows off through the irrigation channels, may again be made to irrigate land at a lower level, and so on, until the bottom of the valley is reached and the effluent water discharges itself into some natural stream.

If water is thus abundantly beneficial to grass, it is so to a much greater extent to root crops which depend for their very existence upon a certain amount of rainfall, and in seasons of drought it is no uncommon thing to see whole fields of turnips, worzel, and beet ploughed up in consequence of a total failure of the crops. If irrigation were available this could never occur, and the additional security thus afforded could not but have a beneficial effect upon the food supplies of this country.

But it may be asked, By what agency should the necessary works for this purpose be conducted? It is clear they could not very well be entrusted to the agency of public companies, and private individuals would too often lack the means of constructing them. Neither could it be expected that they should be undertaken by Government. As great public improvements, however, tending directly to the increase of the national wealth, facilities might be afforded by Government either in the way of granting loans or by empowering holders of a certain extent of land, suitably situated for the construction and development of irrigation works, to borrow money upon the security of their property to be laid out under proper professional advice and supervision. For this purpose it would be necessary that a special Act should be passed in order that two or more holders of land might join together for united action. We are not aware that any English Act of Parliament could be taken as a model of what would be here required, but one might very well be based upon the Spanish "Ley del Aqua," under which irrigation works are permitted to be carried out in Spain, and which is the most perfect and comprehensive enactment on the subject ever yet passed in any country.

FRED. CHAS. DANVERS.

MARKETS OF THE MONTH.

The price of flour has risen since last month, good country seconds fetching, at the time of writing this, 43*s.* per sack, and I cannot but fear that bread will be dearer ere long. Australian tinned meats are much cheaper, four-pound tins now being retailed for 2*s.* The quotations in the meat market have exhibited slight fluctuation in favour of buyers, but there has been no material change since my last report. All classes live more liberally at Christmas time, and so temporarily increase the demand, and the cold weather which generally prevails at that season of the year enables dealers to hold their stock of dead meat in hand, if they do not care to sell; the result being a rise in the price. Consequently this rise is frequently anticipated when the cold weather sets in; and I think we may safely infer that the prices in the meat market will be firmer as the season advances, unless the importation of foreign cattle should show a considerable increase, in which event they will be materially affected, as the high prices now universally prevalent, are doubtless to a certain extent due to the embarassing restrictions placed upon the importation of foreign cattle. With regard to the fish market we have not much to say, lobsters being scarcer and consequently dearer. Oysters command much the same price as last year. Red Mullet are abundant just now, and thanks to the absence of high winds, fish of all kinds is tolerably cheap. Should the equinoctial gales set in with their usual severity, Billingsgate will experience a change; scarcity of fish, and high prices will then be the rule. Cod fish at this season of the year is in especially good condition; but cod fish should be eaten with oyster sauce, and I fear that the sauce will be found to cost considerably more than the cod fish. Prices in the poultry market are, for capons from 5*s.* to 7*s.* 6*d.*, fowls 1*s.* 9*d.* to 3*s.*, turkeys from 6*s.* to 10*s.* (the large ones are reserved for Christmas time), geese from 7*s.* to 9*s.*, black game from 3*s.* 6*d.* to 4*s.*, grouse from 2*s.* 3*d.* to 2*s.* 6*d.*, pheasants 4*s.*, partridges 1*s.* 4*d.* to 2*s.*, hares 4*s.* Woodcocks, snipes, and golden plovers, of which the supply is at present uncertain, are worth, the former 3*s.* 6*d.* to 4*s.*, and the latter from 1*s.* 3*d.* to 1*s.* 6*d.* each. Black plovers are plentiful, at 8*d.* each, and I have

seen a few wigeon at 1*s*. 6*d*. each, but wild fowl is hardly yet in —at least there is at present no very considerable quantity in market. Young pheasants at the commencement of the month were worth 11*s*. a brace. Apples fetch so high a price as to make it pay to send them a considerable distance to market, consequently, there is a fair supply, prices ranging for cooking apples from 10*s*. to 15*s*. per bushel. Malaga lemons are the best just now, and are worth from 30*s*. to 36*s*. a case. Barcelona and brazil nuts are worth 16*s*. a bushel; walnuts have been very dear and scarce, especially English, being retailed at five a penny; French walnuts are worth from 22*s*. to 36*s*. a sack, and Kent cobs and filberts from 6*d*. to 8*d*. per lb. Normandy pippins are very much dearer than they were last year; they are fetching from 90*s*. to 103*s*. per cwt. Grapes are worth from 28*s*. to 36*s*. a barrel. Tomatoes, an excellent vegetable, are now in season, and are cheap this year. Chilies and capsicums too should now be purchased for pickling; these may be bought for 3*s*. or 4*s*. a hundred. A delicious cold sauce to be used in place of real chutney, as a relish, may be made of tomatoes. English pines are worth from 7*s*. to 9*s*. per lb., hothouse grapes from 2*s*. to 4*s*., Jersey grapes 1*s*. 6*d*. per lb. English melons from 3*s*. to 7*s*. each, according to size; Spanish from 2*s*. to 3*s*. each. Peaches and nectarinnes from 6*d*. to 1*s*. Dessert apples and pears from 1*d*. to 4*d*. and 5*d*. each.

Oct. 14th. P. L. H.

Consul the Hon. H. P. Vereker reports as follows on the wines of the Tonnay-Charente district:—"They usually contain more strength and body than the French wines exported to England from Bordeaux, as is shown by the alcohol and brandy that the former more largely produce; they thus seem to offer a less abrupt change from the beverages in use among the people of Great Britain, than the light French wines now introduced, which are too often spoiled by an excessive addition of brandy, and which, even thus, do not appear to have conquered the popular taste. That the wine of this district, when pure, is a wholesome drink, may be assumed in view of the rude health of the country population, who nevertheless often live under unfavourable conditions as to other aliment. Some special localities are even celebrated for the longevity of their inhabitants. It is also quite possible that the remarkable absence of crime from this district, the fact being that it is rare indeed to find here any Frenchman who has drunk to excess, may be attributed to the circumstance that the ordinary drink of the people is the pure wine of the country, as they very seldom take brandy in any way."

CORRESPONDENCE.

IS SMOKING INJURIOUS?

Sir,—Dr. Gray's article in answer to the above subject, which appears in your last issue, is as interesting as it is instructive. Himself a smoker, he naturally defends smoking, but he is no thick-and-thin champion; he shows the votary of tobacco, without reserve or qualification, what are some of the terrible evils which he may entail upon himself, or aggravate, by the use of the weed. It is only against what he deems to be the immoderate use of tobacco that he declaims. He wages that "against moderate smoking in a healthy person who enjoys it, not a single argument of any weight has yet been advanced." Now this certainly appears to be a somewhat sweeping assertion, and one to which I am not inclined to give the same credence which the Doctor does. Perhaps I may be permitted briefly to state my reasons for entertaining a different opinion.

First.—The fumes of tobacco smoke contain a number of eminently poisonous constituents. Recent investigations have shown that amongst the products given off during the smoking of tobacco are found carbonic oxide, sulphuretted hydrogen, sulphocyanic acid, hydrocyanic acid, together with pyridin, picolin, and other bases, which are capable of acting powerfully on the human constitution. Now the question arises, can such poisonous vapours and gases be respired at intervals, day after day, with impunity; can the practice be carried on year after year without damage being done, in proportion to the quantities inhaled? Surely any one who knows, even approximately, the affinity which some of these poisons have for the red blood corpuscles, and for nervous tissue, and the extent to which they are affected by all the smoke ingredients named, will scarcely hesitate in their reply. The results may not be seen for a long time by ordinary observers, may not be perceptible to the smoker himself, but black care sits behind the horseman, Nemesis patiently waits the time till the cup is filled; ultimately, outraged nature vindicates her violated laws, and punishes the irrational and irreverend individual who recklessly destroys the safeguard of a pure taste placed at the entrance of the alimentary canal, to give warning against, and thus prevent, the introduction of aught dangerous to the system. Of course the susceptibility to injury differs at different periods. After mature manhood has been attained, if the system have not been previously injured, the constitution seems to have acquired resistive power which it did not previously possess; but, during childhood, adolescence, and early manhood, the developmental periods of life, the nervous tissues are highly impressible, and therefore are eminently liable to be injuriously affected by adverse influences.

Second.—Another reason for objecting to Dr. Gray's generalisation is, that for the great majority of persons, strictly moderate smoking is not possible. The boy indulges out of bravado, and an affectation of manliness; the man smokes for the sensuous enjoyment he obtains thereby. The exercise of common sense would in each case prove a preventive; but tobacco, like opium, is indulged in for relaxation, not exertion; for sensuous enjoyment, not severe restraint. The chief effect of nearly all the agents found in tobacco smoke, consists in the lowering of the activities of the tissues with which they come in contact. It is true that the first entrance of any of these poisonous agents in a diffused form, like the first entrance of the molecules of any foreign body, by the alteration effected in the chemical relations, cause a sudden extrication of nerve force, and in this way act as a stimulant. But reaction follows, unless the tissue constituents, suddenly exhausted, can be removed and replaced; unless disintegration and nutrition are co-ordinate, and both active, effete material will be retained; restora-

tion of the normal condition will be prevented, and there must be proportionately diminished functional activity, in two words, incipient narcotism. Hence comes the lull and comfort of smoking; hence the tendency to listlessness, dulness, or dreaminess which creep over those who indulge; and hence one reason why a man is utterly indisposed to exercise any check or control over his smoking, and has the inclination rather to give himself up to the habit.

Another reason for the growth of the practice is, that indulgence, after a time, blinds sensation, and to induce the pleasurable feelings formerly enjoyed, a larger quantity must be consumed. But the third cause is perhaps the most important. The injury done to the system by the repeated use of tobacco, begets a state of debility which sets up an increased craving for the temporary comfort which the tobacco smoker derives from the pipe. It is the same with the opium smoker; comfort and discomfort after a time alternate. When the favourite practice can be indulged in, all goes well; when it cannot, then all goes ill. Indulgence begets craving; craving, if indulged, increases; for the appetite grows by what it feeds on.

Dr. Gray and other advocates of smoking are fond of referring to the comfort which tobacco gave to the soldiers in the late war in France when they were short of food, but they forget the intense discomfort such men suffer, when, as frequently occurs, they are short of or are deprived of tobacco; for it is notorious that natural hunger is not half so intolerable as artificial craving.

Thus it is pretty evident that the great majority of men will not, because they cannot, practice moderation; and, indeed, the true moderation is to avoid the use of a thing like tobacco, and to shun the fumes thereof which, as we have seen, are a combination of gases, vapours, and other diffusives of the most virulently poisonous kind.—I am, etc., R. Martin, M.D.

Manchester, October, 1871.

THE GREAT DRINKING QUESTION.

Sir,—The letter of Mr. Dawson Burns, in reference to my article on "The Great Drinking Question," is a clever composition. It seems to impugn my facts, but does not do so. I am glad to hear that the Alliance and the League are not at "daggers drawn," but I am afraid there is still more of the spirit of rioting than of brotherly love. In my article I wrote, "The League wants to put down drinking, the Alliance wants to stop excessive drinking; the League advocates total abstinence, the Alliance advocates temperance." Mr. Dawson says, "The United Kingdom Alliance confines itself to the legislative department of the question, and without passing any opinion upon drinking as an immoral act, and by no means commending the use of intoxicating liquor as a beverage in any degree, the Alliance seeks to procure some legislative enactment, enabling the inhabitants of legally-defined districts to stop the issue and re-issue of licenses to sell intoxicating liquors." Now, sir, as the members of the Alliance are not necessarily abstainers, and, indeed, many of the most distinguished members are non-abstainers, am I not justified in saying that the Alliance advocates temperance, and not teetotalism? That being so,—and I hold that the Alliance Permissive Bill is not in accord with the principles of the Alliance,—how can men who drink alcoholic beverages consistently advocate a plan which may deprive thousands of the poorer classes of their beer? It is impossible to exaggerate the evils of intemperance, and we should do all in our power to check excessive drinking. We have to battle with a mighty foe, and unless we are united, there is no chance of success. I know the zeal of Mr. Dawson Burns, but I submit that it does not advance the cause for which he labours to cavil at a statement which is strictly accurate, though it does not please the members of the Alliance who are abstainers.—I am, truly yours, John Baker Hopkins.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

SOWANS.

An article of food known by this name has long been popular and highly esteemed in Scotland. It is made from the "seeds" of oats thrown aside at the mill in the preparation of oatmeal. These consist of the broken husks (*palcae*) of the grain, to which a little of the finest of the meal still adheres. They are steeped in a considerable quantity of water for two or three days, till the water becomes slightly acidulous. The water is then passed through a sieve, and what remains on the sieve is thrown away as useless. After a day or two more, during which the acidulous taste becomes stronger, the water with the portion of meal which it has taken up is boiled, until it acquires the consistency of paste. It is then generally eaten with milk, but sometimes with butter. A popular Scotch poem mentions "buttered sowans" as an article of luxury. In the north of Scotland *sowan scones* are much in use. They are made by placing the water and meal in small portions on a flat plate or "girdle," such as is generally used in making oat cakes, and adding more as the plate is heated till a considerable thickness is acquired. In making sowan scones, caroy is generally added.

A VERY EXCELLENT SODA CAKE.

Take 1 lb. of flour, 6 oz. of butter or dripping, 6 oz. of sugar, half-pint of milk, one teaspoonful of carbonate of soda, and add one or two eggs, with ½ lb. of currants or carraway seeds. Mix the soda thoroughly with the flour, rub in the butter, and beat the whole with a wooden spoon for twenty minutes before putting into a well greased cake tin; bake for a full hour and a half.

SHEEP'S HEARTS.

A very palatable and economical dish may be made by following the subjoined instructions:—Prepare a seasoning as for a duck, viz., onions, sage, bread crumbs, pepper and salt. Take one heart, or more as required, fill well with seasoning, fastening the aperture with a small iron skewer or needle and thread; place two or three lumps or a little brown sugar into the bottom of a stewpan with a few drops of water; when this is dissolved into a brown or burnt looking colouring add a little more water, with a good sized lump of butter or dripping; put in the hearts, burning them until they are a rich brown; add enough stock to nearly cover them, with a flavouring of a little sauce, pepper, salt, and vinegar, which gives a piquancy. Slowly stew for two hours, and you have a dish fit for an epicure.

NOTES OF THE MONTH.

THE fortunes of Columbia Market are not encouraging for any future philanthropist who may contemplate improving the condition of the poor of London. We deeply regret that Baroness Burdett Coutts' magnificent gift should have turned out a practical failure, for wherever the fault may be, it throws grievous impediments in the way of dealing with increased market accommodation. We most heartily agree with the mayor and corporation of Yarmouth in their request that the Corporation of the city of London will not hastily abandon Columbia as a fish market. It is perfectly scandalous that monopoly should so rule the roast as to make it impossible for London to support but one fish market, particularly when that one is notoriously deficient in accommodation, and is, in fact, a disgrace to any city. Columbia Market has never been fairly tried as to its capabilities, and those who are interested in the fish trade of our east coast see, now that it is too late, what a splendid opportunity they have lost.

ONE common peculiarity of the English character is, that as soon as we are familiarised with a danger, we become recklessly unconcerned as to its effects. This is unfortunately exemplified at the present time in pleuro-pneumonia and the foot and mouth disease, which are assuming most alarming dimensions, and crippling our meat supplies, both now and hereafter. As regards the latter epidemic there has been a progressive increase in the number of cases, which in May had a weekly average of 1,000; in June, a weekly increase of 400; in July, 3,000; while in August there was a rapid development, amounting in the last week of that month to 22,000 attacks. Nearly the whole of Britain, from the Land's End to John o'Groat's House, is suffering from this infection; and, though it is not often fatal to the animal, it is very fatal for the meat consumers. Each beast on the sick list means that there is less food for the country,—and if we were not so used to the mismanagement of all social questions of this kind, we should be disposed to wonder whether the Contagious (Animals) Diseases Act were still in existence.

THE great novelty of the late Social Science Meeting at Leeds was the Sanitary Exhibition, in the Cloth Hall, which, though arranged in somewhat of a hurry, was exceedingly valuable and interesting. Conspicuous amongst the sanitary appliances was food, which formed a very considerable item, and, on the whole, attracted the most attention amongst the articles exhibited. Amongst these we particularly noticed Verkruzen's German Wines, the Aylesbury Company's Preserved Milk, Messrs. Dunn and Hewett's Cocoas, and a tolerable assortment of Australian meats, including those of the Victoria Meat Company, the Australian Meat Company, Messrs. McCall and Co., and Messrs. Tallerman and Co. The great mistake of preserved meat exhibitors, is that they usually either send their tins unopened, so as to be of no use to anybody, or else offer them to public gaze in such an untidy manner as to render them perfectly unappetising. The stand of the Victoria Company was well laid out and looked after, and the consequence was that it formed the nucleus of a considerable crowd. We must also notice Condy's admirable Ozone Water Spray, which attracted much attention; and a most interesting case, exhibited by Dr. Muter, of adulterated articles which have been fully described in the *Food Journal*.

The Annual Fungus Show was lately held by the Royal Horticultural Society, and clearly proved, by the number and quality of the exhibits, that the interest taken in the Fungus question is gaining ground. It is most satisfactory to find that fungus eating is not regarded in the light of a lunatic performance, as was the case only a very few years ago; and we may safely predict that this delicate and nutritious article of food will ere long be a regular inmate of our cookery books. A new species of Agaricus from Norfolk was shown *(A. clavipes)*, together with a very complete collection of edible and poisonous fungi. Epping Forest appears to be a favourite habitat for both kinds; and as the demon of Enclosure is now pretty well exorcised, we may hope that this beautiful district will occasionally add to our food supplies, as it does already to the health and pleasure of the metropolis.

There has been a brisk correspondence in the *Echo*, commenced by Canon Kingsley, on the Australian meat question, and it was gratifying to see the number of remarks, *pro* and *con*, that it elicited. Some of the letters betokened that remarkable depth of prejudice which characterises all our attempts to step out of the beaten track; but on the whole, popular feeling in favour of the meat is decidedly on the increase, and we read that at Manchester a stall for the sale of Australian meat has been established, and is always crowded with customers. If people would but recollect that this meat is never intended to be set up as a *rival* to our own fresh meat, but merely as a *substitute* for it (or to eke it out), they would talk and act with a little more forbearance, remembering that half a loaf is better than no bread.

We have evidently not yet done with tea adulteration, nor is it likely that we shall, as long as our rulers are so culpably apathetic about all sanitary matters. Mr. Medhurst, Her Majesty's Consul at Shanghai, tells us that 53,000 lbs. of willow leaves are now in course of manipulation at one port alone—intended to be mixed with our tea, at the ratio of from 10 to 20 per cent. The trade in these willow leaves, which are worth about 2*d.* per pound, is openly carried on, and not the slightest attempt is made to disguise the object for which they are prepared. Since the frustration of the great Maloo scheme, not the slightest step has been taken by the authorities to prevent a recurrence of it, and we can only suppose that they are utterly ignorant of the question and its importance. The Chinese may well say, "Anything is good enough for such barbarians"—and they might also add, "fools."

BOOKS RECEIVED.

"The Skim-milk Treatment of Diabetes and Bright's Disease." By A. S. Donkin, M.D. Longmans and Co.

"On the Relative Powers of various Substances in Preventing the Generation of Animalculæ." By J. Dougall, M.D.

"The Death-rate in Salford." Report of the Medical Officer of Health.

THE

FOOD JOURNAL.

FOREIGN OFFICE REPORTS.—Part XVI.

On Provisions and Markets.

New York (*continued*).—The sanitary code of the city gives to the officers of the Board of Health the necessary powers for inspecting all food brought within its bounds, and by the same law the police authorities are required to carry out all orders on the subject made by the Board of Health.

The code further requires that if an inspector or other officer of the Board discovers any meat, cattle, birds, fowl, fish, or vegetables in a condition unfit for human food, he may obtain the opinion of two respectable persons thereupon. If these respectable persons disagree with him on the point, he can take no action until further instructed by the city inspector; but if only one agrees with him, he may then and there forbid the sale of such animals or articles till the owner has received the permit of the chief city sanitary inspector. If both persons agree, he may order the offending articles at once to be removed.

The following regulations refer to cattle generally. No cattle, sheep, goats, or geese are allowed to be at large in the city; neither can they be unloaded from any railway into a public street, except by a written permit from the Health Department. No cattle, pigs, or goats are allowed to be kept within the city without a permit; and if they are so kept, the place must be satisfactorily looked after in the matters of ventilation, water, and feeding appliances. Cattle are not allowed to be bound or tied by the legs during their transit from one part of the city to another, but must have perfectly free and unfettered standing room. The hours for bringing cattle and pigs into the city are between 8 p.m. and two hours before sunrise. Sheep, however, are allowed a longer time, and may be brought in until noon. Drovers are not permitted to have a drove of more than 20 cattle, 150 pigs, or 250 lambs, it being considered that they cannot safely look after a larger number at a time; and the droves are restricted to certain streets, except by special

permission of the health or police authorities. Every drove of twenty must have one attendant; under 100 three attendants are required, and one additional for every forty head over 100.

Market Laws.—The leasing of all butchers' shops and greengrocers' stalls within the public markets is given to the Comptroller of the City, under the direction of the Common Council, and the clerks of the market are required to collect the rents of the stalls every day, and pay them in once a week to the City Chamberlain. A quarterly account of these rents is made out for the Comptroller. A bell is rung for five minutes before the closing of the market, and anybody who remains selling his goods for fifteen minutes after the bell stops is fined $5. There is a fine of $10 for selling garden produce in any but the allotted place. The Clerk has absolute power to remove anything from the market, such as carts, barrows, or baskets, and the owner who refuses to obey his order is fined $25. He has also power to suspend any body from selling within the market, whether he be a licensed butcher or not, but he must immediately report the occurrence to the Superintendent of Markets, whose decision on the point is final. Until this decision is given no suspended vendor can resume his occupation within the market precincts, under a penalty of $10. The city ordinances require the exclusion from the market of all persons engaged in combinations to raise the price of provisions. The following is the tariff of rents for stalls:—

For sale of vegetables or fruit from the country ..	12½ cents.	per day.
For a fisherman	6¼ ,,	,,
For a countryman bringing the produce from his own farm	6¼ ,,	,,
If an agent is employed for one farmer only	50 ,,	,,
If a captain of a vessel sells the produce brought in his vessel	50 ,,	,,
If he employs an agent	2 dols.	,,
All hucksters (men)	50 cents.	,,
All hucksters (women)	25 ,,	,,

If a person bring produce to sell for another, he must have a written authority from the owner describing the quantity, and any body neglecting this rule, or showing a fictitious authority, is fined $25. No person may buy provisions to sell again within the city until after 12 o'clock at noon under a penalty of $10. No butchers are allowed to expose for sale any meat after 10 o'clock between May 1st and October 31st, or after 2 o'clock for the remainder of the year. On Saturdays, however, they may sell up to 11 o'clock at night. Carts have to be unloaded and removed immediately after their arrival, under a penalty of $10. No person may bring into the market any description of food in a covered

chest, or in any way so that it cannot be seen, under a penalty of $5. Refrigerators, ice boxes, or pickle casks must be kept at the back of the stalls, must be lined with lead so as to be watertight, and must be provided with a pipe of lead, zinc, or copper leading to the nearest gutter. No poultry, eggs, or butter can be exposed for sale unless they are the produce of the owner, or unless the person selling them has been into the country and purchased them direct from the farmer. Under a penalty of $5, all butter is sold by weight, and in rolls of 1 lb., without any fraction, and when contained in tubs or firkins it may not be sold in less quantity. All vessels which are brought into the market containing butter must have the weight legibly painted on the outside, under a penalty of $5. Trout may not be exposed for sale between the 15th October and the 15th March, under a penalty of $5 for each fish. The sale of heath hens is forbidden between January 1st and October 1st, under a penalty of $10 for each bird. Quails and partridges are forbidden to be sold between January 5th and October 25th; woodcocks between February 1st and July 1st.

Licenses are granted to butchers for one year at $1 per license, and 25 cents for renewal, and any body carrying on the trade of a butcher without this license is liable to a penalty of $50. Even the licensed butchers are under stringent regulations against cutting up any meat except at their own stalls.

The sale of hay and straw is restricted to certain localities and certain landing-docks. Every carter employed in the haulage of hay or straw is licensed for this purpose, and has to subscribe to an oath before the Mayor that he will carefully examine it, and ascertain that it is sufficiently cured and dry.

The laws regulating the sale of live cattle and dead meat are more strictly carried out than any others, as they come under the special charge of the Board of Health, which is a comparatively recent institution, and very vigorous in its administration. Those relating to the taking and sale of game and fish are not enforced so rigorously. Considering the minuteness of the foregoing regulations, it is surprising to learn that the principal markets in New York are little more than dilapidated sheds, filthy and unwholesome in the extreme, and universally held by the inhabitants to be a discredit to the city. The prices of provisions are generally regulated by protective combinations of producers and dealers, who have associations for the purpose. It is the existence of these associations, possessing almost the power of vast monopolies, that has gained for New York the doubtful reputation of being one of the most expensive cities in the world.

CURRY.—Part II.

Although only used as a constituent of curry powder to the extent or one half the last-named seed, Cardamoms possess at home the importance which so frequently falls to the share of foreign products. "There are three varieties of Malabar cardamoms," writes Dr. Hassall, "distinguished in commerce, which are named from the size and form of the seed-pod: *shorts*, *short-longs*, and *long-longs*, the shorts being the most esteemed variety; the two latter differ from each other in size only." The three sorts are brought from Bombay in chests. The shorts are usually the dearest, and fetch from 3*d.* to 6*d.* per lb. more than the longs. The long-longs are seldom brought over from Madras, but only long cardamoms (usually short-longs); they are generally packed in bags, and are lighter by weight than the Bombay sort, and usually fetch 3*d.* per lb. less than the latter." If the use of this fragrant seed was confined to its employment as a considerable ingredient in curry alone, no fault need be found, but we find that an inferior sort, *Amomum Granum Paradisi*, indigenous to the islands of Madagascar and Ceylon, and popularly known as "grains of Paradise," or Meleguetta pepper, is annually imported in immense quantities for the purpose of imparting an artificial and fictitious strength to spirits, wine, and beer. This variety of pepper is said to have been known in Italy previously to the fifteenth century, when it was discovered on the coast of Guinea; but as the Italians were not aware from whence it was procured, and yet esteemed it the most precious among their spices, they called it *grana paradisi*. In Africa it is believed to be the most wholesome of all the condiments, and is in general use by the natives for seasoning food. Although by the Act 56, Geo. III., c. 58, it is ordered that "no brewer or dealer in beer shall have in his possession or use grains of paradise, under a penalty of 200*l.* for each offence, and no druggist shall sell it to a brewer under a penalty of 500*l.* for each offence," it is believed that large quantities are used for this purpose; at the same time it is assuring to have the dictum of an eminent medical man that* "a very erroneous notion prevails that these seeds are highly injurious."

* Pereira's Materia Medica, p. 1134, quoted from Roscoe.

A member of the same family as the Coriander, the *Cuminum Cyminum*, is a native of Upper Egypt, and is grown to some extent in Sicily and Malta. Although, as a rule, cummin seed forms one of the least copious ingredients in curry, yet, as it is to its marked and peculiar aromatic flavour and odour that some of the characteristic taste and smell of the relish is owing, this seed is rarely omitted.* It was a favourite ingredient in the miscellaneous cookery of our forefathers, but has now been supplanted by more agreeable condiments.† In ancient times, also, cummin-seed was used as a wash, in the form of infusion, and smoked for the purpose of procuring a pale, delicate visage. Young ladies who prefer such a countenance to the rosy hue of health may take the hint, and consult Dioscorides, Pliny, and Horace.

The remaining ingredients of curry—mustard-seed, ginger, black pepper, poppy-seed, garlic, and cinnamon—are too well known to require any description, so we close the catalogue with Fœnugreek-seed. This is the produce of the *Trigonella Faenum Graecum* of the *Leguminosae* family, which grows chiefly in India, Sicily, and Arabia. Without possessing the pungency of cummin-seed, the agreeable sting of cardamoms, or the concentrated fire of cayenne, fœnugreek still owns sufficient characteristic flavour to earn instant recognition in any curry mixture of which it forms an item. By itself it tastes somewhat like coarse, raw horse beans, but when mingled with other ingredients it so far parts with any objectionable features as to leave only a favourable impression on the palate.

It will be evident to the reader that, although no home-made curry need hope to compete in flavour with that of oriental manufacture on account of the impossibility of procuring the chief materials fresh, yet as many of the items are uninjured to any considerable extent by the voyage, and some are regularly produced at home, an admirable substitute is within reach of all. Looked at simply as an agent of economy in the poor working man's family, there is probably no accessory more valuable which costs so little, and yet which adorns and renders attractive his humble board so effectually. By its magical aid rice, that most insipid of all cereals to the British labouring appetite, is invested with hitherto undreamt of charms, and the poverty-stricken family which, during a period of potatoe failure, is reduced almost to starvation, may tide over its difficulties on curry and rice at less expenditure, better health, and more satisfaction than on any other element.

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* Maculloch's Dictionary of Commerce, 1869 edition, p. 479.

† Andrews' Cyclopædia of Domestic Medicine, p. 134.

The following is a poor man's curry mixture sufficient to last for many meals, which, if properly manipulated, need not disgrace any table in London:—

1 Cocoa-nut, and 1 lime, sliced.			
Cardamoms, thoroughly ground	.. ..	2	oz.
Cinnamon	,, ,, ...	2	,,
Chillies	,, ,, ...	1	,,
Coriander-seeds	,, ,, ...	4	,,
Black pepper	,, ,, ...	4	,,
Mustard-seed	,, ,, ...	2	,,
Turmeric	,, ,, ...	5	,,
Ginger (dry)	,, ,, ...	4	,,

and if made when cocoa-nuts are plentiful and cheap, and limes or lemons in season, will be found as close an approach to a Singapore curry-paste as it is possible to obtain outside the tropics.

Presently, however, we are reminded of the flight of time by the gentleman with the pale gingerbread complexion, who has followed us about Singapore, and intimates that "Masta more better go back hotel side now, as one piece prawn curry all ready;" so, after a bath, we, along with the other passengers, take our places at the dinner table. It occupies the centre of a large, gloomy, but comparatively cool apartment, somewhat deficient in furniture, with a floor of tiles and whitewashed walls. Darkness having supervened, candles are placed on the table, each protected from draughts by a tall bell glass, surmounted by a covering of perforated silver. As we sit down, the punkah slung from the ceiling commences to waft a gentle, yet grateful gale, over the heads of the guests; the spectral looking servants in white flit noiselessly like ghosts to and fro; the cocoa-nut oil lamps over the doorways and in recesses flicker in the artificial breeze, and we feel as though about to dine in a crypt. But our thoughts are quickly recalled from the strange oriental surroundings to the evident enjoyment of our diplomatic acquaintance and fellow passenger. He has just been served with a dry curry and a glass of amontillado, yet, although the wine is rich as ever ripened on a volcano, his expression is not quite yet that of the satisfied. Presently he glows with a look of rapture and astonishment at the first spoonful of the host's gastronomic triumph. Plate after plate of green cocoanut prawn-curry disappears; a benevolent smile suffuses his countenance; starched officialdom is forgotten, and with a throbbing bosom he heaves a sigh and drops a tear of thankfulness or repletion into his fifth unfinished trencher.

Wm. Cochran.

UNE JOURNÉE RUSSE.

We take it for granted that everyone of our readers knows what is a *Diner Russe*, but we have a strong conviction that they do not all know what is a *Journée Russe;* and, as the unknown is always attractive, we will take the liberty of saying a few words on the subject.

In France, the *gourmet*—not the *gourmand**—ranks with the connoisseur and the virtuoso; cooking being a fine art, its patrons naturally take high rank. But the age is a degenerate one, as we are told, and fewer grand *gourmets* than formerly will now take the trouble to make up a party in Paris, corresponding with the *testaurateur* or the *ménu;* or will come more than a hundred miles to eat the most artistic dinner in the world. This is very sad, but we fear that it is true, especially since the war.

The *gourmet* flourishes still in many provincial localities; he may be found any day at Bordeaux, Rheims, Nice, or Nantes; and his habits are somewhat different from those of his *confrère* of Paris. In the capital, it cannot be said that few people ever eat a good dinner; but a very first-class dinner is always eaten by few persons; the rule is much the same as amongst English epicures, "Not more than the muses, or less than the graces;" but I am not aware that the odd guest, the "hunting cog," as an epicurean engineer once called him, is deemed so necessary to prevent the splitting of the company into pairs. In Paris, as in London, that is to say, in houses where dining is understood, the dinner finishes with coffee at 11 o'clock, or thereabouts; but it is far different in the provinces even in the best society; and this brings us back to the *Journée Russe* which, like a wedding festival, means a *dejeuner* at noon, a concert, then a dinner (which Lucullus would not have disdained), a ball, and a supper! It is marvellous how the ladies get through the heavy duties which they owe to Society, but they manage to go through all the acts of *Journée Russe*, with a short drive added,

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* Note.—The *gourmand* was well described by Theodore Hook's sailor, who said his captain was a regular epicure; and when asked by a shipmate what an epicure was, replied, "Why! bless my eyes, don't you know what an epicure is? Why! a fellow as can eat anything, to be sure!"

making three if not four *toilettes*, as easily as a ticket-porter gets through his day's work, and make their appearance on the following afternoon in the park or promenade, as fresh and rosy, and smiling, as if nothing extraordinary had happened.

The following is the *carte* of the dinner of a *Journée Russe*, given by a celebrated *gourmet*, at a watering-place in France, before the war:—Potage Palestine à l'Impératrice; Consommé aux pointes d'asperges; Petites bouchées Rostégayi; Saumon du Rhin, sauce Valence; Langue de veau à la milanaise; Filets de pintade à la Renaissance de Paris; Punch rosé; Chapons de Bresse, Gibier; Chaud-froid; Pâté Talleyrand-Périgord; Croûtes d'ananas au champagne; Mousse à la Vestillas. Vins:—Madère vieux, Xérès, Johanisberg-Cabinet, Saint-Peray, Château-Lafite vieux; Champagne—Rœderer, Carte-Blanche, veuve Cliquot, Malvoisi.

Nothing could be more *recherché*—one kind of fish, one *pièce de resistance*, and one dish of poultry; all the rest the very poetry of the *cuisine*—the flowers of the gastronomic garden; and all sprinkled with the choicest dew that Bacchus sheds over our dusty paths. Twenty-one guests partook of the dainty feast; and, though half ladies, all were epicures, and did thorough justice to the well-studied *ménu* of the great Amphytrion. A beautiful picture should have suitable surroundings, so it may not be amiss to add that the company itself was the *crême de la crême*, and that the diamonds were only eclipsed in brilliancy by the eyes and the wit that sparkled around the board.

Every great feast must have its one novelty amid the classic dishes, and in this case it was the *Mousse à la Vestillas*—a gastronomic revelation: it was not a cream, or a jelly, or a blanc-mange; it was a cloud—a perfumed vapour—a quintessence of violets—probably the very ambrosia served to Juno upon Mount Ida.

We do not recommend the above *ménu* for every-day use, but think that it might be indulged in, like marriage, just once in a way; and we see no just reason or impediment why the two should not be united together.

Y.

The Russian way of Dressing Cucumbers.—The cucumber is sliced in the usual way. A few celery leaves must be previously chopped very fine, and mixed with a good quantity of the best oil, sufficient vinegar, pepper, and salt being added to give it the proper piquancy. This mode of dressing cucumber makes an agreeable change in summer to many palates. As the flavour of celery is very powerful, proper caution is requisite.

THE SANITARY CONDITION OF THE "BLACK COUNTRY."

The district locally known as the "Black Country" is, in many of its most distinctive features, totally unlike any other part of England. Its geological formation is peculiar, and this peculiarity has greatly affected the character of the mining works executed for winning the valuable minerals underlying this part of Staffordshire and Worcestershire. It will plainly appear in the course of the present inquiry that the sanitary condition of the population owes many of its most unwelcome phases, wholly or in part, to causes dependent on the physical conformation of the country, and the system of mining arising therefrom. It is almost, if not quite impossible to convey by any verbal description an adequate idea of the grimy desolation of the busiest parts of the Black Country. Anyone accustomed to ordinary towns or rural districts will feel appalled on first entering this region of pits and forges. The ugly "spoil banks" of the pits; the crumbling buildings and rickety machinery of deserted workings; the jagged fences of scoria; the thick muddy water and broken banks of the canals; the sooty lanes, lined with squalid houses, which are cracked and out of perpendicular; and the numerous swags or stagnant pools, make up an inconceivably repulsive landscape, over which hangs an atmosphere foul with heavy, murky smoke and dense clouds of blacks. To walk through the Black Country on a wet day is to realise a veritable slough of despond under an atmosphere like a pall.

If each reader of the *Food Journal* could take such a walk, there would be but small need to chronicle the facts which follow, to prove that the present condition of this district is a blot upon English civilisation. The whole of the central part seem fitted to be the hotbed of zymotic diseases, and the grave of men's moral and physical wellbeing. The masses of the people suffer terribly from impure air, bad water supply, want of drainage and sewerage, overcrowding in wretched dwellings, and intolerable filth. No wonder, then, that diarrhœa, typhus and typhoid fevers, diptheria, paralysis, and many other diseases engendered by such causes as those enumerated, grievously afflict the poor in the towns and villages of the Black Country. In 1867 the *Birmingham*

Daily Post sent a special commissioner into the district to report on the sanitary state then prevailing. His account of what he met with was such as to shock public feeling; but it is still more painful to find that little or no improvement has since taken place. During the present year the dreadful condition of the locality has aroused the attention of the Privy Council, who have caused Dr. Thorne to visit several of the chief centres of population, and to draw up reports on the sanitary state of each place visited. The startling disclosures contained in these official documents have created a very uncomfortable sensation in the Midlands, and raised a storm about the ears of the local authorities of more than one Black Country parish. As a matter of course the local boards all try to pooh-pooh Dr. Thorne's reports, calling them "highly-coloured," "gloomy and partial," and so on; but the high colouring and gloom are only too plentifully supplied on the spot by the actual condition of each place visited. Then it is vehemently proclaimed—as though there were something of moral dereliction in the act—that Dr. Thorne actually visited in each district the "*places pointed out to him as the worst.*" Surely a doctor, having to examine a moribund patient, would most properly devote his attention to the sore spots. It will be advisable to consider the sanitary state of each locality in detail, and then to discuss the excuses and palliations advanced by the local apologists for disease and filth.

Oldbury.—Dr. Thorne says, in his report, that "Oldbury, in Worcestershire, was visited in consequence of the appearance on the death registers of the sub-district of a considerable number of deaths from fever and diarrhœa, as well as from scarlet fever, during the past year. Zymotic diseases, which are almost endemic in the township, caused in 1870, 46 deaths; 39 fatal cases of diarrhœa took place, and diseases of the respiratory organs, which are unduly prevalent, caused 93, out of a total of 365 deaths."

Anyone who will take a walk through Oldbury and observe the filthy ooze of foul slime which struggles along the gutters of such places as Eel-street, and mark the pools of slops and urine in the squalid courts and yards, need not seek further for the cause of disease and death. Dr. Thorne found underground cellars and apartments everywhere undrained, and many containing over two feet of water, "which is at times of a most offensive character." Most of the channels and gutters lead to the canal which flows through Oldbury, others empty themselves into small water-courses and ditches, or even into stagnant pools. On many premises no drains whatever exist, and the most noisome liquids are left to

escape by soaking through the soil into the shallow surface wells. No place could well be worse off for water than Oldbury. The South Staffordshire Waterworks Company furnish a partial supply of turbid, but comparatively wholesome water. Very many of the people, however, draw their supplies from shallow wells, in close proximity to the very foulest cesspools full of excremental filth. In the outlying parts of Oldbury I have seen the people fetching water as much as three quarters of a mile from a spring on the road to Rowley Regis, the only alternative being to purchase from water-carts at uncertain intervals. Speaking of this deficiency of water, Dr. Thorne says:—"It deprives the poor of the principal means of keeping themselves and their premises clean, and it must be considered as one of the prime predisposing causes of disease. The poor themselves urgently beg for a proper supply; some informed me that they were compelled at times to resort to the canal, which is, in reality, the main town sewer, in order to wash themselves; and on several premises I found that lumps of ice and masses of snow had been collected, and were being melted down for domestic use. The want of water has also, in a peculiarly offensive manner, been a cause of spreading typhoid fever, for during the past year (1870) some of the inhabitants have been compelled to wait until a rainfall before the linen of the patients could be washed, and the amount of unwashed and poisonous linen which has thus accumulated has, I am informed, in some houses caused an indescribable stench."

Dr. Thorne dwells upon the disgraceful condition of the numerous closets and middens which are allowed to discharge their foul fluids on to the surrounding soil. As he truly remarks, Oldbury abounds with pigstyes and rubbish heaps of every description. No wonder that Dr. Thorne says that "the sanitary conditions which exist in Oldbury, a town containing 18,000 inhabitants, and possessing a local board of health, call for severe censure, the more so as ever since 1855, when the locality was visited by William Ranger, Esq., C.E., on behalf of the General Board of Health, the question of sanitary improvements has constantly been before the authorities."

Then in 1867 we have the commissioner of the *Birmingham Daily Post*, describing the town as being "in a dreadful condition," and pointing out that a very heavy per-centage of the death-rate arose from "bad drainage, over-crowding, pig-keeping, insufficient water supply, and impure atmosphere." It is horrible to contemplate the havoc made by preventible diseases amongst the children of these festering hotbeds. In nine months, out of a total number of 342 deaths of all ages, 222 were children under five years old.

Some years back Oldbury had a medical officer of health. This gentleman carried out some great improvements in various parts of the town, and notably on properties belonging to the then members of the local board. Very quickly this board resolved that, "as the expense of such an appointment was unnecessary it should cease." Possibly Dr. Thorne's scathing report and the comments of the press, may lead to a speedy resuscitation of this office.

Already some action has been taken, as on a recent visit I saw that some cleansing and disinfecting had been going on. It is to be hoped that some way may be discovered to compel the owners of property in Oldbury to execute needful repairs and improvements. How sorely these are required is proved by the condition of some cottages in Stone Street. These cottages, says Dr. Thorne, "belong to F. W. Barr, Esq., J.P.; they are filthy inside and out, the windows are so dilapidated that it has been necessary to fix an old door across one, and to block up the empty frames of others with torn clothes and dirty rags; the well is fouled, owing to its proximity to a neglected middenstead; and the drainage, having no outlet, accumulates in a filthy ditch, and rises at times to within a foot of one of the cottage doors."

The reader may probably nourish the hope that Oldbury is an exception amongst South Staffordshire towns, and that the rest are comparatively healthy. I am sorry to say that such is not the case, as is amply proved by the disgraceful condition of the next town on my list.

Dudley.—It is impossible in the space at command to attempt an exhaustive inquiry into the sanitary state of this town, therefore I shall content myself with the more prominent features embodied in the Privy Council report.

In 1861 Dudley possessed 44,975 inhabitants, but now it has only about 43,791. The cause of this decrease is the decline of trade in the town, arising from the exhaustion of some of the older coal mines. The poverty thus induced presses very heavily upon the town, but not so severely as to palliate the utter neglect of ordinary sanitary measures.

The site of the town presents many facilities for a thorough system of drainage, being elevated and possessed of good natural outfalls. Nevertheless, many parts of Dudley are as yet unsewered, and even devoid of any means of surface drainage. The natural results have followed. There are stagnant pools and ditches, and straggling streams of slime and slop. Brooks which were once pure and wholesome now positively stink, and much of the well water, which is bright and sparkling, is largely impregnated with

noxious matter. The closet accommodation of Dudley is of the most wretched description. Dr. Thorne quotes cases where "four, five, six, and even fourteen houses are provided with only one solitary closet."

He draws a shocking picture of the dilapidated and filthy condition of these closets, the roofs and doors of which are broken down, or entirely gone. Immense middens, notwithstanding their capacity for holding enormous masses of filth, are full to overflowing, and in many cases great heaps of refuse are piled up outside them. Of the nuisances arising from ill-kept pigstyes Dudley affords but too many instances. Of the water supply it is unnecessary to say more than that it is partly furnished by the South Staffordshire Waterworks Company, of whose water I have already spoken, and partly from wells. The water from some of the wells is described as "nice and sparkling," the other as "stinking." Dr. Thorne says, "the difference between the sparkling and treacherously refreshing beverage, and the offensive fluid, is simply that which depends upon the quantity and the state of decomposition of the contained filth."

The house accommodation in Dudley is so wretched as literally to defy adequate description. The following illustrative cases are taken from Dr. Thorne's report :—

Dock Lane.—In one of the courts of this lane a house was entered in which six cases of typhus had occurred. There were two filthy bedrooms, in one of which ten persons slept on three separate heaps of shavings, each person having less than 90 cubic feet of air, and this must have been well saturated with the emanations from a heap of about 300 cubic feet of refuse, which lay within 5 feet of the dwelling.

Greystone Street.—In this street there is a court containing fourteen houses, but only one closet.

The Barracks.—This group of houses was approached by a long passage, lined to a great extent on one side by filthy closets, some of which were doorless, roofless, or otherwise dilapidated, and whose contents overflowed and blocked up the passage. The dwellings are shamefully neglected and overcrowded; in one of them ten persons reside, and they have all had typhus. They sleep in two horribly filthy bedrooms; in the first one two beds, one of which is occupied by the father, the mother, and an infant; the other by two females, in their twenty-first and thirteenth years, and two males, in their sixteenth and eleventh years respectively; the second room contains one bed, which is occupied by three males.

At Netherton, one of the outlying parts of Dudley, are eight cottages. Three of these form one property, which is destitute of any water supply. The people can thus only get water by stealing it at night or by using the contents of a filthy swag, into which the drainage of roads, houses, and stables runs. In the first cottage Dr. Thorne found seven persons, all of whom had had typhus. In

the second cottage lived ten persons, members of three different families. Three of these ten were orphans through the death of their parents by typhus. Five of the ten had fever when Dr. Thorne paid his visit, and the other five had recently had it. In one room were two beds. In the first bed was a case of typhus; yet three other persons, all females, slept in the same bed at night. In the second bed was a child ill with typhus, and three others occupied this bed each night. The second bedroom barely held the bed. In it two men lay terribly ill of fever (supposed to be typhus), and another male slept with them at night. In the third cottage six inmates out of seven had had fever. Truly a nice property this! There is no doubt that the landlord sends regularly for his rent. When we find continual examples of patients ill of typhus lying upon heaps of filthy shavings, swarming with vermin, and the people not actually smitten with the disease sleeping with them at night, in close, stuffy rooms which know no cleansing, what wonder that we hear of whole families being struck down by the epidemic?

A most painfully visible mark of the sad sanitary condition of the Black Country lies in the cadaverous complexion of vast numbers of the people; only too surely the result of living amidst squalor and filth, drinking foul water, and breathing impure air. Dismal and depressing is the outward aspect of this neglected district; frightfully alarming is its actual condition as bearing upon the moral and physical state of its poorer classes. A small ray of comfort may be gathered from the fact that Dr. Thorne's report has made a most profound sensation. But whatever hopes are aroused at first sight are likely to be chilled by the reflection that the Black Country towns have been similarly warned in years gone by, and have often suffered fearfully from epidemic scourges, but always with the same result—a short-lived bluster, a mere spurt of disinfecting and cleansing; and then an apathetic relapse into the old ruts of filth and neglect.

J. Beverley Fenby, C.E.

[to be continued.]

A Report of the Board of Trade on Merchant Ships (scurvy), speaks highly of Mr. G. Buchanan's preserved vegetables, which are recommended by the medical officer of the Dreadnought, after trial, on account of their nutritive properties, the facility of being cooked, their palatableness, and because they keep well without any special exclusion of air. The spinach, onions, savoy, cabbage, and brocoli, are pronounced as comparable with vegetables in their fresh state, and they are therefore likely to be largely used in the mercantile marine.

SUGAR.—Part II.

The sugar planters have made the further discovery that the sugar in the forms may be purified by a very simple process, which is now in general use. The sugars thus operated on are usually known in the trade as "clayed" sugars. This process is based on the fact that syrups more readily mix with water than do crystals of sugar however small. A layer of very moist clay is placed over the sugar exposed in the forms, and the water from the clay slowly finds its way towards the plug at the opposite end of the cone, and carries with it the syrup which has adhered to the crystals. Of course a small portion of the crystallised sugar is dissolved, but the benefit to the sugar in general amply compensates for this slight disadvantage.

Another modification of this process consists in making a saturated solution of pure white sugar, which of course cannot dissolve any more crystals of sugar. This solution has, however, the property of carrying with it the dark syrup adhering to the crystals, and thus after the pure syrup has percolated through the sugar in the forms, it leaves the crystals almost free from colouring matter. The sugar when thus purified is removed from the forms, and packed in hogsheads for the foreign markets.

The claying and syrup processes require a considerable time to be effectually carried out; and the planters, to expedite business, have now generally adopted the centrifugal machine, which is very efficacious in ridding the sugar crystals of adhering syrup. The machine consists of a revolving drum, having fine wire gauze round the outside to prevent the sugar from dropping out. When the sugar is placed in the drum, and the machine set in motion, the sugar steadily moves towards the circumference, but is prevented falling out by the wire gauze, whilst the treacle passes with ease through the meshes. A calculation has been made that when a machine makes the ordinary number of one thousand revolutions a minute, the tendency of the treacle to leave the crystals of sugar is upwards of five hundred times greater than when allowed to drain in the ordinary way by the force of gravity.

From what has been said it will be seen that the sugar produced at the plantations varies greatly in quality. The clayed sugars, and

those with bold and distinct crystals, are rich in saccharine matter, and consequently when imported they should be charged with a higher duty than sugars of low quality.

Since 1854 the government has recognised this fact by legalising a scale of duties to correspond with the saccharine value of the sugars imported, but though the customs authorities strive as much as possible to be equitable in their assessment, much yet remains to be done to make the system perfect. The difficulty in the way of a correct assessment is the number of samples to be tried, which now amount to about a million and a quarter annually.

For the assessment of the duties on importation the sugars imported are divided into six classes, and the duty to be charged is regulated by the amount of pure sugar that could be obtained if the sugar imported were refined. It must not, however, be gathered from these remarks that every sample of sugar is critically examined, for so much knowledge can be gained by painstaking observation, that the majority of samples submitted for assessment only require to be compared with standards for naming the class to which they correctly belong.

The present rates of duty, and the per-centages of refined sugar represented by each class, are as follows:—

Refined sugar and sugar-candy,	6*s.* 0*d.*	per cwt.	= 100	per cent.	of refined sugar.
Unrefined sugar, 1st class ..	5*s.* 8*d.*	,,	= 94	,,	,,
,, ,, 2nd class ..	5*s.* 3*d.*	,,	= 88	,,	,,
,, ,, 3rd class ..	4*s.* 9*d.*	,,	= 80	,,	,,
,, ,, 4th class ..	4*s.* 0*d.*	,,	= 67	,,	,,
Molasses	1*s.* 9*d.*	,,	—		

The standard for refined sugar and sugar-candy is not difficult to fix, but for the four classes of unrefined sugar the standards require most careful selection. This subject has been considered of such importance to the commercial interests of this and other countries, that in 1864 representatives of the governments of England, France, Belgium, and the Netherlands, met together at Cologne to make a series of experiments on a large scale for fixing uniform standards for the four countries. The per-centages of refined sugar given in the above table were then settled for the purpose of establishing a fixed relation between the rates of duty to be imposed upon the different classes; and thus it will be seen, that the rates of duty given in the table bear exactly the same relation to each other as do the per-centages of refined sugar, determined by the experiments at Cologne, as the standards for the different classes.

The terms of the sugar convention have been enforced in the

four countries since 1867, but the French Government has allowed the refiners in that country to evade some of the regulations, and thus obtain on the exportation of refined sugar a bounty from the State which acts most injuriously against the interests of the refiners of the other three countries, and enables the French refiner to sell loaf-sugar in the English market cheaper than it can be made in this country.

This unfair advantage to the French refiner certainly keeps down the price of loaf-sugar, but at the same time it is not satisfactory to find the English refiners unable to compete successfully with the foreigner in their own market, and that through no fault of their own. This keen competition causes the manufacturers of refined sugar in Great Britain to carry on their operations much more scientifically than do the planters in our colonies when manufacturing raw sugar. Every appliance is therefore brought into use which will, in the least degree, either increase the yield of sugar or improve its quality.

The refiners of this country produce two descriptions of sugar, which may be generally classified as loaf-sugar and pieces. The former kind is produced chiefly in London, the latter on the Clyde and in Bristol.

In the manufacture of refined sugar the first care of the refiner is to select the raw sugars best suited for refining purposes. For some years past much beet sugar has been used, but the low kinds have so disagreeable an odour and flavour that they cannot be used with advantage. It is also essentially necessary that the sugar selected shall be particularly free from fruit sugar and the soluble salts natural to the sugar cane and beet root. Fruit sugar will prevent the crystallisation of its own weight of cane sugar, while the soluble salts will prevent the crystallisation of five times their own weight of cane sugar.

When the raw sugar has been selected and properly mixed together, it is dissolved in a certain quantity of water and boiled. The liquid is then passed through bags made of cotton to separate all mechanical impurities. The next operation is to decolourise the syrup, which is effected by passing it through beds of animal charcoal. The syrup when colourless is put into the vacuum pan and concentrated, as in the case of raw sugar. The boiling is continued till crystals begin to form, and then another quantity of syrup is let into the pan. By this mode of working the crystals are increased in size, and this operation is repeated till the sugar is of proper "grain." The sugar, when drawn from the vacuum pan, is run into the forms and allowed to crystallise, and the uncrystallised

sugar is separated from the crystals by a concentrated solution of pure cane sugar, as before described.

The loaves of sugar, when properly drained, are dried in a stove, and afterwards turned in a lathe into proper shape. The drainings from the forms are again concentrated, and loaf sugar of lower quality is produced. This operation is several times repeated, and when loaf sugar cannot be made, the refiner then produces a kind of moist sugar known in the trade as "bastards." The uncrystallisable sugar from the "bastards" is concentrated and afterwards sent into consumption as treacle.

The manufacturers of the Clyde do not produce loaf sugar, nor do they as a rule make treacle. The absence of the treacle must not, however, be considered so much an evidence of the perfection of manufacture as of skilful management; for abundance of treacle is actually produced, only instead of sending it into consumption as treacle, the refiner so granulates the lowest kinds of sugar he produces that they absorb the treacle, and thus it is sent into consumption as solid sugar.

The manufacturer of "pieces" only proceeds exactly in the same way as if he were making loaf sugar up to the time that the syrup leaves the vacuum pan. The syrup is put into the forms, and when crystallised the remaining syrup is usually separated by the centrifugal machine. The product of the first crystallisation is known in the trade as "lumps," and the remaining crystallisations as "pieces." The sizes of the crystals of sugar in these different varieties diminish considerably as we descend from the highest to the lowest qualities; in fact, the very lowest qualities cannot be said to be crystalline, but only granulated, and they contain a large quantity of grape sugar, which has been produced by repeatedly boiling the syrup, and also by the action of the charcoal used for clarifying the sugar.

From what has been said respecting the purification of loaf and other sugars by the use of a concentrated syrup of white sugar, it is evident that the real difference between a white and a brown crystal of sugar is simply that the latter is a white crystal to which a brown syrup mechanically adheres. This fact shows the importance of selecting for domestic purposes sugar with bold crystals, the only drawback to the use of such sugar being that it requires a long time to dissolve, while the advantages are that it can contain but little moisture and a minimum quantity of treacle and impurities. The low class bastards and pieces when seen under the microscope are found to have a very indistinct crystallisation, and they contain a considerable quantity of grape sugar and a large amount of mois-

ture. The chemical analysis of raw sugars proves that the better qualities contain very little grape sugar, and but a small quantity of uncrystallised sugar. They are also comparatively free from moisture. Their composition is therefore much superior to refiners' pieces, but as they have not been treated with charcoal they unfortunately are a little darker in colour than the latter. The general public buy by colour only, and this fact being well known to the refiner, he is careful to produce an article likely to please the eye, whilst the grocer is equally as anxious to placard these *pieces* as *raw* sugar. Now the grocer well knows that he has to give a much higher price for bright raw sugar than for pieces of a lighter colour, and this fact perhaps furnishes him with a motive to lead the public astray on the subject. This imposition is practised to such an extent that, from careful observation, it is not an overstatement to say that in every nine shops out of ten the sugar exposed in the window for sale and ticketed "raw sugar" is nothing but pieces.

The public have, however, the remedy in their own hands; and if when purchasing moist sugar they would use their noses as well as their eyes, they would not easily be the victims of the imposition we have named. The smell of pieces is generally most offensive; and the lower descriptions not only contain a large quantity of grape sugar, which has only about two-fifths of the sweetening power of cane, but also iron and other impurities. Whenever an iron salt is present, if such sugar is used for sweetening tea, it strikes a black colour with the tannic acid contained in the tea; in fact, the solution thus becomes a weak writing ink.

It would be very desirable if in popular lectures on food more attention were given to this subject. The public require to be educated in this as in other matters; and in the case of *raw* sugar *v. pieces*, it is not too much to say that the head of almost every family in the United Kingdom is at one time or another deceived.

R. Bannister.

FRIJOLÉS:

A CHEAP AND WHOLESOME ARTICLE OF FOOD.

The word *frijolé* (pronounce *free-holy*) must be familiar to everyone who has read a book of Mexican travels, for it would be impossible to give any extended account of a country without mentioning an article that is of daily use in its domestic economy. Such is the frijolé. Instead of daily, it would be more correct to say twice a day; for, from the town of Taos, in the extreme north, to the Isthmus of Telmantepec in the south, there is not a Mexican cottage, however humble, where frijolés are not cooked and eaten at least once, and often twice, during the twenty-four hours. Since between these two points there dwell some seven or eight millions of people, who are all more or less frijolé-eaters, the importance of this comestible will be at once perceived. And that it is a palatable one may be deduced from the fact that, in most parts of the territory where it is in use, there is no lack of other edible substances of superior quality—as, for instance, the banana, the yam, the sweet potato, the manioc root, with an endless list of other roots and fruits, available for human food. Notwithstanding this plenty in the realms of Pomona and Ceres, the frijolé maintains its place in the Mexican *cuisine*, not only as an occasional viand or *entrée*, but as the *pièce de résistance* of the table, sharing this honour only with the *tortilla*. It is in reality the national dish of the country.

A description of it is easily given, for the frijolé is nothing more than what we are accustomed to call a "kidney bean," and known to our French neighbours as the "haricot." It is true, the kinds eaten in Mexico are somewhat different from either our scarlet-runners or dwarfs. But they are only varieties of the same plant; differing from the French haricots more in the colour of their outward cuticle than in their essential substance or flavour. The kind commonly used in Mexico—that mostly met with on the *table-lands*—is a small black bean (*phaseolus Hernandezii*); while another sort of a brownish red colour is cultivated in districts of the *tierra caliente*, or low-lying tropical lands of the coast. The latter have the reputation of being a superior kind—considered as an article of food.

Frijolés in Mexico are not eaten, as with us, pods and all, in

their green unripe state. Before coming into the kitchen they are fully ripe, and shelled clean of their capsules—in short, they are in sacks. It is in the mode of cooking that their chief speciality lies—as a dish rendering them quite different from either the "pork and beans" of Yankee land, or the "haricots" of France; and, it may be added, producing a food more palatable than either, as also more valuable in an economic sense.

The manner in which Mexican frijolés are prepared for the table (the phrase is somewhat figurative, as in the cottage homes of Mexico tables are almost unknown) is as follows:—The beans are first boiled until they have become thoroughly soft. To effect this a little lye is sometimes thrown into the *olla*, or earthen pot in which the boiling is done—just as in preparing the Indian corn for *tortillas*. When well boiled the beans are next submitted to a simmering process, being mixed with a little lard and some chile pepper—not the dry, pulverised dust, known to us as "cayenne," but the green, pulpy pod of the capsicum, crushed between the *metaté* and *mettapilé* (the two stones used in *tortilla* making). Of these capsicums there are several species employed in the Mexican *cuisine*, such as the *chile colorado*, or red; the *chile verde*, or green; the *chile rilleno*, etc.; and there is scarcely a dish cooked in Mexico of which one or other does not form a component part. It is from Mexico the term "chile" came, an Aztec word, as the subjects of Montezuma indulged in the luxury of red pepper long before Cortez set eyes upon the city of Tenochtitlan.

In addition to the lard and capsicums, the frijolés are further savoured with just a *soupçon* of onion, or it may be garlic; thus producing a dish that, for piquancy, is not easily excelled, and, all things considered, can scarcely be equalled in cheapness.

It is partly for this last reason that I have here taken the pains to describe it; believing that if introduced into England, and *naturalised* in the cottage homes of our poorer countrymen, it would prove to them a real blessing—cheaper than even their dry bread and cheese, and far more palatable than the scrap of badly-cured American bacon—the only article of so-called flesh-meat which they have usually the privilege of tasting. The frijolé will grow in the climate of England, as well as upon the soil of Mexico: indeed, it does grow here, thriving most luxuriantly, and yielding a hundredfold—since it is but the scarlet-runner, or the still more prolific "dwarf." And capsicums can also be cultivated in any quantity, while onions are indigenes of the soil. Lard is not dear—at all events, it is the cheapest of culinary aids—and in the cooking of frijolés only a very small quantity is required.

This dish, of course, calls for an accompaniment of bread, just as any other stew or soup; and in Mexico it is eaten with the universal *tortilla*—the latter, as is well known, being torn into pieces, and employed as a scoop or spoon, that is swallowed with each mouthful of the stew.

Extensive tracts of the Mexican table land, as also large estates in the *tierra templada* and *tierra caliente*, are devoted to the cultivation of *phaseolus*. Indeed, the production of this article of food is one of the industrial features of that country.

In fine, if our philanthropists would favour the introduction of frijolés into our cottage kitchens, as much as they are doing that of the Australian beef, they would perhaps be rewarded by a better result—one equally beneficial to the cottager, who would consume the frijolés, and more so to the British farmer, who would find it to his advantage to grow them.

Mayne Reid.

We have lately partaken of roast mutton and a chicken, prepared by Mr. Richard Jones' process. Both of these were undeniably good, and very difficult to detect from fresh provisions of the same kind. There was a slight discolouration of the skin of the fowl, but not sufficient to attract ordinary notice, while the flavour was most excellent. Unfortunately, no memorandum was sent stating the actual interval that had elapsed since the preparation. The following is the *rationale* of Mr. Jones' treatment, as detailed by himself at a meeting of the Food Committee of the Society of Arts :—"We put the meat into tins, either with or without bone, in joints or otherwise. The tins are filled quite full, and are soldered up entirely, with the exception of a small tube, about the size of a quill, which is soldered into the top of the tin. The tins are then put into a bath capable of holding 96 6-lb. tins. Along the centre of the bath runs a tube carrying 12 taps, into each of which may be inserted a tube from 8 tins, there being 8 stuffing-boxes to each tap, 4 on each side. The tube communicates with a vacuum chamber. The bath contains a solution of chloride of calcium, which boils at a temperature of from 270° to 280°. In commencing operations, the bath is gradually heated until it gets to about 212°. Communication is then opened with the vacuum chamber, and the result is, that as water boils at about 100°, *in vacuo*, the water is carried off in the shape of steam, into the vacuum chamber, where it is condensed. The tap is then turned, so as to shut off communication with the vacuum chamber, and the meat is cooked at a high temperature, until complete preservation is effected. We then go on cooking the meat, occasionally turning the taps, just to do what engineers call priming, in order to draw off any fluid that may be in the tins. After it has been thus cooking for about two hours at 250°, it is in a preserved state."

CONDITION OF THE WORKING CLASSES.

No. 2.—The Netherlands and Norway.

As in my last article I touched upon the condition of the artizans in Belgium, I propose now to work my way northwards and visit the Scandinavian countries, taking Holland on the way. I have in a previous number of the *Journal* described the social state of the Dutch, which was very elaborately set forth in a Report* of Mr. Thurlow, anent the exhibition at Amsterdam, and I need not, therefore, go so minutely into the subject as I should have otherwise done. I may also refer to some inquiries made by myself when in that country, respecting the food of the working-classes, and especially those of Amsterdam.† As regards the manufacturing population of Holland, Amsterdam is scarcely a fair criterion, since it is not the centre of this population, which is principally found at Arnheim and Deventer. The nine hours' claim has evidently not reached this part of the country yet, as the hours of labour vary from ten to fourteen, the average being eleven. Bakers in Deventer get about 8*s.* a week; printers, 9*s.*; tailors, 8*s.*; plumbers, 9*s.*; masons, 9*s.* 6*d.*; shoemakers, 8*s.*; bricklayers, 9*s.* 6*d.*; joiners and blacksmiths, 8*s.*; carpenters, 9*s.*; painters, 8*s.*; iron-founders, 11*s.* The value of these wages, which to English eyes appears very meagre, lies, of course, in the price of provisions, which, as before, I will compare with the prices in London:—

Mutton in Deventer	....	4½*d.*	per lb.	.....	London,	9*d.*	(average.)
Beef	,,	7*d.*	,,		,,	9*d.*	,,
Pork	,,	7*d.*	,,		,,	8½*d.*	,,
Butter	,,	10*d.* to 1*s.*	,,		,,	1*s.* 6*d.*	,,
Bacon	,,	8¼*d.*	,,		,,	11*d.*	,,
Milk	,,	4*d.*	per quart		,,	5*d.*	,,
Buttermilk	,,	½*d.*	per pint		,,	—	,,
Potatoes	,,	1*s.* 2½*d.*	per bushel		,,	—	,,
White bread	,,	2*d.*	per lb.		,,	2*d.*	,,
Rye bread	,,	1*d.*	,,		,,	—	,,
Coffee	,,	9*d.*	,,		,,	1*s.* 1*d.*	,,
Tea	,,	2*s.* 0*d.*	,,		,,	2*s.* 8*d.*	,,

It will thus be seen that prices of provisions are generally 25 per cent. less, but the real secret lies in the difference between the character of the Dutch and English working-man. The former is

* Vol. I., p. 347. † Food notes from Holland, vol. I., p. 93.

phlegmatic, difficult to move, easy going, and happily attached to his country, and as Mr. Locock truly observes, "he may be a poor man, but he is at least not in that chronic state of discontent which displays itself in such disagreeable colours amongst many of the working-classes of our own country. The same wise legislation which prohibits hostile combinations of one class against another protects the artizan in all legitimate reunions and combinations. Workmen's clubs and trade unions abound in every town in the country. The law allows such societies to discuss with full liberty all questions connected with the relations of master to man, and to use all amicable and legitimate means for effecting a change in those relations. What it prohibits is a hostile demonstration of a whole class against another, or of a whole body of workmen against a common employer." An enquiry which was set on foot amongst the working men of the estimated cost of living, with a view to effect a rise in wages, produced the following results:—A blacksmith, with a wife and child, considered that his living cost 15*s.* 10½*d.* per week, without allowing anything for meat, beer or spirits; a mason, with a wife and two children, gives his weekly expenses at 22*s.* 6*d.*; a bricklayer, with a wife and four children, is less exigeant, and prices his weekly wants at 16*s.* 3*d.*; and a bricklayer's labourer, with a wife and four children, lives at 14*s.* 6½*d.* Considering that the rates of wages were from 8*s.* to 10*s.*, it must be allowed that an ample case was made out for a rise of wages. Our English workmen would never live for so small a sum, nor would they remain quiescent for a week at such a tariff; and although the Dutch are not renowned for their skill or speed in working, one can only congratulate the Kingdom of Holland in possessing a people who are satisfied with their lot, or at all events are satisfied with endeavouring to mend it in a peaceable and legitimate manner.

Norway is in a much better position, arising from the variety of pursuits and callings to which the physical nature of the country and the extent of sea coast have given rise. The working classes may be roughly divided into:—1. The seafaring peasantry, who gain a living partly by fishing and partly by farming, according to the time of the year. 2. The *bonde*, who occupy their own farms, but are compelled to work themselves—the yeomen, in fact, of the country, but with this difference, that they own no landlords. 3. The *felde bonde*, or mountain farmers, who feed cattle, fell timber, and kill game. Next in numbers to these classes of population (which constitute two-thirds of the nation) come the miners, iron workers, and quarriers, of whom there are over 240,000. Generally

speaking wages are higher than in Holland, agricultural labourers getting (per week) from 8*s.* to 10*s.*; woollen factory operatives from 10*s.* to 26*s.*, according to the nature of their work; cotton hands 8*s.* to 18*s.*; paper makers from 16*s.* to 18*s.*; miners from 32*s.* to 35*s.*; ironfounders from 16*s.* to 32*s.*; carpenters from 16*s.* to 26*s.*; hatters from 15*s.* 6*d.* to 22*s.*; printers from 13*s.* to 22*s.*; tailors from 2*s.* 8*d.* to 3*s.* 6*d.* per day. These rates, of course vary according to the character and skill of the workman and the particular work on which he is engaged.

The food throughout the country is of the simplest description, and, as regards the agricultural population, master and man fare very much alike. Neither of them see fresh meat, except on rare occasions, the provisions usually consisting of coarse rye or barley-bread, barley or oat porridge, potatoes and salt fish. Coffee is drank to a great extent, and is seen on the table of the poorest inhabitant.

Meat is very cheap, almost half the price that it is in England (particularly when it is remembered that a Norwegian lb. is 2 oz. heavier than the English lb.), and the only expensive article in this list is tea. Firewood or fuel is always rather a costly item in a Norwegian household, owing to the difficulty of carriage; and in many places along the coast it is far cheaper to burn Newcastle coals than forest wood. The Norwegian peasant is very easily pleased, and his wants are simple; and it is these qualities, combined with a considerable degree of self-dependence and hardiness, that make him such an excellent emigrant. Of late years great improvement has taken place in his social condition, by the establishments of savings banks, of which there are now 250 in the kingdom, having a deposit of nearly five millions sterling. Co-operative societies, too, are prospering; soup kitchens and baths have been established, and model lodging-houses are being built in the large towns. In the establishment which is now open at Christiania each family has one room, 11 ft. by 11 ft. and 10 ft. in height, with a kitchen, loft, cellar, and a yard for washing, the rental being 7*l.* 10*s.* per annum. Although there are many labourers' unions, they are simply in the form of benefit societies, and have no political bearing. Strikes are scarcely known, even by name, and no instance is on record of any combination having occurred to coerce masters with the view to obtain higher wages. For her own sake, it is to be hoped that Norway will long remain in this state of happy content.

Phillips Bevan, F.R.G.S.

A WORD FOR SUNFLOWERS.

Among the plants of which we in England generally fail to make the most is the well-known ornament of our gardens, the *Helianthus annuus*, and yet there are few vegetables which could be turned to more account. We have no excuse for this neglect, for the plant in question has long been known and cultivated in this country. Towards the end of the sixteenth century we hear it spoken of as a common garden flower, so that the date of its first introduction into England from Peru must have been considerably earlier. The only way, generally speaking, in which the sunflower is utilised in England is the employment of the seeds as food for poultry and smaller birds, and this purpose it answers admirably. But besides this, there are numberless other and more important uses to which it could be put, but which we have generally neglected.

Other countries have not been so backward as England in recognising the useful properties of the sunflower. In the north-west provinces of India it is cultivated to a considerable extent, and with much success, in swampy districts; and it is asserted that the sunflower plantations exercise a beneficial influence on the health of the neighbourhood, by tending to check the malarious fevers so prevalent in those parts. The Agri-horticultural Society of the Punjaub, in a recent report, advocates the more general cultivation of the sunflower for utilitarian purposes, and also enumerates some of the advantages which would attend it. We find that the flower leaves, removed without deranging the seeds, may be used as fodder for cattle, and with great success; the stalks when burnt produce large quantities of potash; and the seeds, besides their use in feeding poultry, already mentioned, may be made to yield a large per-centage of oil.

In that practical country, the United States of America, where sunflower cultivation is carried on to a considerable extent, principally on account of the value of the plant as an oil producer, as much as 40 per cent. of oil is, on an average, obtained from the seed. After the process of expressing the oil, the refuse, under the name of "marc," is largely used as a fattening food for oxen, hogs, etc. More than this, the leaves also may be utilised; for, by parching and powdering them, and then mixing with bran, it is said that a food is produced to which cows are especially partial. Even if it

had none of these useful qualities to recommend it, the excessive fondness of bees for the blossoms of the sunflower would alone repay all owners of apiaries for the trouble of cultivation.

Here is a long list of uses, but we have not done yet. There is another still, which, although we ignore it, the ingenious Chinese have not suffered to escape them. The stalks of the sunflower, when subjected to the same treatment as flax, yield large quantities of fine, useful fibres; and it has been supposed that the shrewd Celestials make an extensive use of these in their silk manufacture.

Any one of all these valuable properties would seem sufficient to induce the general cultivation of the sunflower; but when we hear, in addition, that the dried leaves make a good substitute for tobacco, and the roasted seeds for coffee, the neglect of this really useful plant, in this age of adulteration and spurious imitation, becomes more surprising than ever. Moreover, the sunflower is by no means fastidious as to soil, and may easily be cultivated similarly to Indian corn, either sown broadcast or in rows. All this being so, it seems a pity that we do not avail ourselves more of the useful qualities of the helianthus; and, as we all know,—

"Omne tulit punctum qui miscuit utile dulci,"

—another reason why it should be redeemed from its present unmerited oblivion; for it is a really handsome, showy flower, thus wonderfully combining the useful with the ornamental.

Another sunflower, which is somewhat more highly regarded in England, is the Jerusalem artichoke (*Helianthus tuberosus*), which derives its name, not from any connection with the Holy City—although the soup made from the roots *is* called Palestine—but merely from the fact of its being a sunflower, the Italian name for which is *girasole* (sun turner), and of this "Jerusalem" is an obvious corruption. It seems possible that the Jerusalem artichoke was known to the Romans, and used by them as a table vegetable; but it was afterwards neglected and forgotten, and in 1610 was reintroduced, somewhat later than the sunflower. At first it was largely cultivated in England, and became so common that we hear from a contemporary writer (Parkinson) that "even the vulgar began to despise them." It found a dangerous rival in the potato, and subsequently fell into general disrepute, and at the present time is not cultivated nearly so extensively as it deserves. On the Continent and in America it is used as a vegetable and in soups; also as a food for hogs. And we may be sure that it would be well worth our while to make more of it than we do.

G. F. P.

TASMANIA IN 1871.

For the annexed information we are indebted to a useful little pamphlet lately published at Hobart Town, by order of the Tasmanian Government.* It has been written to correct "the *great inaccuracies in published statements* referring to the Colony." A conspicuous offender in such matters is that really valuable work, Martin's "Statesman's Year-book," published by Messrs. Macmillan. In the edition of this work for 1871, amongst other similar errors, the area of ground actually under cultivation in Tasmania, and the value of the wool exported during the twelve months preceding 31st March, 1870, are each of them shown as *one-third* less than the amounts given in the official statistics of the colony for that period, although these are cited as authority for the misstatements.

The eighteen counties into which the Island of Tasmania is divided comprise an area of fifteen and a half million *acres English*. The islands off its coasts—fifty-five in number—most of them lying in Bass' Straits, have an area of one and a quarter million acres more. The land under cultivation in the Colony on 31st March, 1871, amounted to 318,484 acres. The population numbered 100,000 souls, of whom 46,475 were females. The black aboriginal population is now reduced to *one*—a female, aged seventy-six years. The colonial death-rate for the last ten years has been considerably below 15 per 1,000 per annum. The number of houses in the Colony is 20,364, of which 4,424 are in Hobart Town, which has 19,092 inhabitants. Launceston, the second place of importance in the Colony, has 2,303 houses, occupied by 10,688 inhabitants. The agricultural returns for 31st March, 1871, show 22,583 horses, 95,097 horned cattle, 1,513,187 sheep, and 49,524 pigs in the Colony.

The exports of the Island are principally wool, flour, grain, fruit, preserves, hops, horses, sperm oil, timber, vegetables, and tanning bark; the total value for the year 1869 having been 826,932*l.*

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* "Hints to Emigrants." By H. M. Hull, Esq. With a "Paper on Local Industries." By E. C. Nowell, Esq., Government Statistician. Printed by order of the Tasmanian Government. Hobart Town, 1871. The pamphlet may, we believe, be procured at the Tasmanian Agency, 84, Lombard-street, E.C.

The average rates of wages and prices of provisions, which do not vary much throughout the Colony, either in town or country, are given as follows :—

Wages.—Ploughmen and farm labourers, 7*s.* 6*d.* to 15*s.* per week; shepherds, 20*l.* to 50*l.* per annum; gardeners, 20*l.* to 40*l.* per annum—all with rations; the rations consisting of 12 lb. or more of meat, 14 lb. of flour, 2 lb. of sugar, and $\frac{1}{4}$ lb. of tea per week. Day labourers get 4*s.* to 5*s.* a day; bricklayers, 5*s.* to 8*s.*; masons, 6*s.* to 10*s.*; carpenters, 5*s.* to 10*s.* per day—without rations. Female cooks receive 15*l.* to 30*l.*, with board; laundresses, 17*l.* to 30*l.*; general servants, 13*l.* to 30*l.* a year.

Provisions.—Bacon, 6*d.* to 9*d.* per lb.; bread, $1\frac{1}{2}$*d.* to 2*d.* per lb.; fresh butter, 10*d.* to 16*d.*; cheese, 6*d.* to 1*s.*; coffee, 1*s.* to 1*s.* 3*d.*; tea, 1*s.* 4*d.* to 3*s.* 6*d.*; sugar, 4*d.* to 6*d.*; meat, $2\frac{1}{2}$*d.* to 6*d.* per lb.; milk, 4*d.* to 6*d.* per quart; potatoes, 3*s.* to 4*s.* per cwt.; flour, 12*s.* per cwt.; beer, 6*d.* per quart; spirits, 3*s.* 6*d.* to 5*s.* per bottle; candles, $5\frac{1}{2}$*d.* per lb.; coals, 17*s.* to 27*s.* per ton.

The average crops from rich, newly-cultivated lands are 25 bushels wheat, 25 barley, 26 oats, 3 to 10 tons potatoes per acre.

In good seasons and good situations this yield is sometimes doubled. Individual specimens of mangolds of 126 lb., turnips of 90 lb., carrots of 18 lb., potatoes of 5 lb., and pumpkins of 120 lb. weight have been exhibited in Hobart Town. The average yield of hops has hitherto been somewhat low, in consequence of a portion of the plants being still young; in the most favourable cases the yield per acre in 1870-71 was 1,100 to 1,500 lb. As in all new countries, the style of cultivation is exceedingly bad, and the returns are consequently much below what they would be with a proper system of drainage, manuring, and rotation of crops.

In quality, as in quantity, the Tasmanian grain is very good. The wheat scarcely ever yields less than 62 to 64 lb. per bushel. In the meal tub it does not absorb quite as much water as American flour, but it is found to exceed the best English grown wheat in the weight of bread produced by equal quantities of flour. It appears to be secure from the attacks of the weevil and other destructive grubs, and is therefore peculiarly fitted for export. For wheat and oats there is a brisk demand for home consumption and export. The climate of Tasmania is better suited to the potato than that of Australia, and the yield is better. Certain soils in the Colony appear peculiarly favourable to this plant, but even in the best situations the returns are much less than might be obtained with an improved mode of culture. Within the last five years turnip culture has almost ceased. The *aphis*, so destructive in the old country, is well known in the Colony. Mangolds are much grown and thrive well. Vegetables, *i.e.*, carrots, cabbages, onions, potatoes, etc. were exported in 1870 to the amount of 10,770 tons. Seeds

of all kinds are said to be procurable in the Colony *cheaper* and *better* than at home; and it should be significant to our seed-growers to find it stated on official authority that those sent out from home "are almost always adulterated or damaged." The supply of fruit, wool, and some other articles is reported at present to about balance the demand. Amongst the industries suited to the employment of *fresh capital*, we find the following specified:—

The Cultivation of Sugar.—Beet has lately received attention in the Colony, and experimental crops have been tried with success. No analysis has yet been made, so that it is impossible to say how the soil and climate may affect the saccharine principle. If arrangements were made for a suitable supply of roots, a sugar factory and distillery *might* prove a profitable investment. The excise duties on colonial made spirits are 10*s.* per gallon; on imported spirits, 12*s.* per gallon.

Tobacco is at present grown only for sheep-washing purposes, but there is no reason why the finer sorts should not be raised and made to pay.

The opium poppy might be grown successfully. It seems that opium produced in temperate climates is of better quality than that grown in hot countries. If so, there is reason to believe that Tasmania would prove a suitable field for its cultivation. From the seed of the poppy—which is much grown in France—an oil is extracted, which is said to be preferable to that of the olive for all purposes to which the latter is applied and to be perfectly free from the poisonous properties of the plant.

The olive is another vegetable production to which Tasmania is suited. The slow growth of the trees naturally tends to discourage the culture, but it seems probable that they would come into bearing earlier than in Europe.

For malt liquors there is a very large demand in the Australian colonies, which, in the nature of things, must be permanent; the climate of Tasmania, from its mildness and equality, rendering it impossible for the hotter countries of the mainland ever to compete with her on equal terms. Here is a field, at present almost unoccupied, which would *certainly make a handsome return for the employment of an adequate amount of capital.*

In dairy-farming and pig-keeping the Australian colonies are, in like manner, precluded by nature from competing on equal terms with Tasmania, and the latter must, therefore, always have the advantage. Where the climate is moist, or where facilities exist for irrigation, dairy-farming on a sufficiently extensive scale, with proper appliances for saving labour and ensuring economy, would

pay well, and pig-keeping and curing bacon and hams would naturally be combined with it.

The numerous rivers and streams in the Islands supply the market with mullet and several other kinds of fish, and the English brown trout has been acclimatised in them. The coasts abound with excellent sea fish, of which the "trumpeter" is the most esteemed; crayfish, for which there is a considerable demand amongst the Chinese settlers in Victoria; and oysters. To a small extent fresh and dried fish are now supplied to the other colonies; but if proper arrangements were made, and a very moderate amount of capital invested, a large business might be done in this way. The Steam Navigation Company's vessels run regularly between Tasmania and Melbourne, and furnish a ready means of conveying the fish, not only fresh, but alive if needed. The run from Launceston does not occupy more than twenty-four hours, and from Hobart Town about forty hours.

An Act passed by the Tasmanian Parliament in 1869 authorises the payment of certain bonuses to the first person or company complying with the terms prescribed in each case. Amongst these are —(1) A bonus of 2,000*l.* for sugar manufactured from beet or other products grown in Tasmania—200 tons to be manufactured in one year. (2) In the event of 300 tons of salt being manufactured in one year, a bonus of 10*s.* per ton for the first hundred tons, and 5*s.* per ton on the remainder. Other bonuses are provided for the manufacture of corn sacks or wool sacks and woollen stuffs. The writer of the pamphlet adds:—"It should not be concluded that the tariffs in force in the Australian colonies generally, by imposing duties which are designedly or virtually protective, operate most prejudicially in contracting their commercial dealings with each other, and *would therefore limit the demand for any duty-paying article.* . . . It may reasonably be hoped, however, that before long a new and uniform tariff and customs-union will be established."

Amongst other items of interest in connection with the food resources of the Colony, we note the following:—Many parts of the Island still swarm with kangaroos; and in some places rabbits are so abundant that their flesh is boiled down for the pigs. Feathered game—including wild ducks, teal, widgeon, bronze-winged pigeons, plovers, quails, snipe, etc.—is very plentiful; so also are parrots and magpies. All the game birds and the magpies —which are supposed to be friends of the sheep farmer—are very wisely protected by law during the breeding season.

Franklin Island, in Storm Bay, has been presented to the colonists by its purchaser, Lady Franklin, and is used for the purposes

of the Colonial Acclimatisation Society. It is well stocked with partridges, pheasants, hares, deer, etc.

Many of the islands in Bass' Straits are inhabited by men who follow the precarious trade of sealers and mutton-bird procurers. The immense number of mutton-birds annually destroyed may be inferred from the fact that 2½ tons of feathers formed the exports of a single season, each bird furnishing only 1-20th lb., which would give a total of 112,000 birds. They are salted, dried, and smoked like fish, for winter use, and fetch 3*d.* a piece in Hobart Town. A young swarm of bees may be obtained in October for 8*s.* or 10*s.* If placed in a sheltered corner facing the sun, the bees will thrive, and throw off seven to ten swarms in the season. Where they have access to flowers of the gum tree, as much as 40 lb. to 100 lb. of honey has been taken from a single hive. It fetches 4*d.* to 8*d.* per lb. in the towns.

H. M. Chichester.

Alaska is coming into the provision market as a purveyor of dainties, obtained from the whale and the sea lion. A preparation of the tenderest parts of the fur seal is recommended as the greatest propelling power of the age, and as a preventive against hunger and thirst. We would rather, if compelled, try old Avicenna's recipe for the latter, which he says will make eating and drinking unnecessary for ten days. Take 2 oz. of oil of violets mixed with 1 lb. melted beef suet, 1 lb. of sweet almonds (unshelled), mucilage, *quant. suff.*, roots of marsh mallow, 1 oz. Let all be brayed together in a mortar, and made into boluses of the size of a nut.

New Gas Roaster.—A new apparatus has been added to the rapidly increasing number of inventions, which, perhaps, may eventually supersede the old-fashioned and awkward method of cooking by a coal fire. This has so very many disadvantages attending it, that we really are surprised to find that there are still houses in which gas-stoves are not only never seen, but their advantages absolutely denied. We live in hopes, however, that the day is not far distant when it will be impossible to blacken or smoke anything during the process of cooking. Real economy of fuel may, perhaps, ere long become a subject of national importance, which can no longer be burked as an absurd and extravagant apprehension, and will universally be considered a fit subject for legislation. Until then we may note that gas may often be used for cooking purposes at a less expense than attends a coal fire. The new apparatus is termed the Economic, and will roast a good-sized joint at an expenditure for the gas of one half-penny; so that the cost of cooking a chop, steak, or grill, is infinitesimal. A joint of meat, when roasted at a coal fire, loses considerably in weight; but a joint roasted by this patent apparatus, made by Messrs. F. Walton and Co., Wolverhampton, is said to lose in weight one-third less than it would under other circumstances.

COOKERY PAPERS.

No. 6.

Monotony, or sameness, is another failing of our system. Variety, especially in food, is charming as well as wholesome; and to ensure variety it is essential that a certain amount of practical knowledge of the art of cookery be called into play by the mistress. Some families, all the year round, have a particular joint for each day of the week; there is no change, neither is the method of dressing it altered. Drop in, say on Wednesday, and you may safely bet a thousand to one that you know what is for dinner. Such a state of things is due to the small amount of consideration which the mistress is disposed to bestow on the matter of food. Time must be given up to explore the markets or the tradesmen's shops; and her knowledge of cookery must be called in to direct in what manner such and such things shall be cooked. There are, however, as most mistresses are aware, certain things which can always infallibly be obtained; so that no question of variety is raised, but to save trouble the changes are rung upon such things with a wearisome monotony; whereas with a little thought the tune might be varied, I will not say without increased cost, but I go further and say, with an absolute saving of money,—at considerably lesscost. Is not the game worth the candle? I venture to put this question to the vote of the family where the mistress takes the trouble to go to market herself, and knows how food ought to be cooked. That house is blessed where the mistress possesses a conception of the *savoir vivre*.

There is yet another point of view from which we must regard this subject. The Israelites in Egypt could not make bricks without straw, neither can the cook be expected to work cleanly and expeditiously, or to exercise either much ingenuity or skill, without the proper conveniences and the necessary appliances.

The kitchen should be furnished with the requisite utensils, in number sufficient for the work that has to be done. The workman should never have to wait for tools. On the other hand, careful management will make a sufficiency where want of method finds a deficiency. Hence the mistress should know what is absolutely

necessary. Beyond a certain limit, however, economy in this direction becomes reprehensible parsimony; for the food, under such circumstances, is too often not properly cooked, and cleanliness becomes a difficulty; the cook works at a disadvantage. The mistress had better err on the other side and purchase more utensils than are absolutely necessary. The old-fashioned cooking apparatus, consisting of an open range in the centre, with a boiler on one side and an oven on the other, is assuredly doomed. To it and to the imperfect construction of our chimneys we owe, in most instances, the smoke which I have before mentioned as being the most predominant flavour in so many dishes.

The kitchener and other patent apparatus are rapidly driving it out of existence. The kitchener is as compact and as convenient a cooking stove as can be desired, and a vast variety of operations can be safely carried on with the one fire at the same time. The old-fashioned hot plate is not to be despised, especially when much cooking is required, but it is not adapted for roasting. Hence, where the kitchen possesses one, a range also is necessary. This of course has been an insurmountable obstacle to its adoption in small houses. It is, however, almost impossible that anything cooked upon a hot plate can be smoked. The utilisation of gas in the kitchen for culinary purposes is fast becoming more universal; but I do not think that for general use, especially in large families, any gas apparatus can excel the kitcheners (of which, however, there are many varieties), either as regards economy or convenience. On occasions when heat is only required for a short period, a gas stove will be found to possess enormous advantages.

For instance, the kitchen fire can be let out after dinner, instead of being made up; the water for tea can be boiled on a gas stove at a less expense than the keeping up of the fire necessitates. Where only a chop or steak requires cooking in the course of the day, the gas stove will be found economical. It is ready for action at a moment's notice, and is not consuming fuel from the instant it has completed its task. Every house ought to possess a small gas stove; for in summer time especially it is inconvenient to keep up a fire in the kitchen all day long. A gas stove is an inestimable boon to the bachelor. The architecture of our kitchens is not all that could be desired; they are inconvenient, dark, too small, and in too many instances absolutely unhealthy from imperfect ventilation. I have tried to discover the advantages which would arise from constructing the kitchen at the top of the house, as has frequently been suggested, but I have failed to find them. The dis-

advantages would be numerous; not perhaps more numerous, however, than those attendant on kitchens constructed *below* the ground floor. The kitchen, I think, should be *on* the ground floor; and I would suggest that it should be a one-storied building, or lean-to, attached to the house either at the side or back, wherever space permits. A convenient arrangement of doors would confine the odours of the kitchen, to which the delicate sensibilities of some fastidious persons so strongly object. I would suggest that such odours should be permitted, if possible, to escape into the street for the benefit of the indigent poor, who could come and take their dinners there by sniffing the smell of the family joint. I make this suggestion as a means of utilising the ideas of those people who say that the smell is enough to give them their dinner. Were a little attention, however, given to the requirements of the cook when building a house, much greater facility in the practice of cookery would be the result. It is not to be expected that every kitchen should be as perfect, or on the same magnificent scale, as that of the Reform Club, or as Baron Rothschild's at Ferrières, or the late imperial kitchen at Chantilly. Still we may hope ere long to see a general improvement in the kitchens of small houses, as the builders of our day are becoming alive to the importance of the kitchen department; and there is no reason why more consideration should not be shown to the cook, both as regards her health and her convenience.

The expense of construction need not be increased. I am simply suggesting the application, by the builder, of method and management, instead of muddle and confusion. The materials are there; it is the arrangement only which is faulty in many cases. Order was evolved from chaos.

There is yet one more remedy which I would suggest on concluding the subject; it is education—universal education. This will produce a vast effect on the cause of cookery in the direction of improvement, by bringing a higher standard of intelligence to serve under the *drapeau* of the *cordon bleu*, and by furnishing better educated recruits to the ranks of an army whose battalions are not enrolled for destroying life, but for preserving it.

A Cook.

THE FOOD SUPPLY OF KURDISTAN.

When strolling about the bazaars of Baghdad, I often used to be struck by the appearance of some of the passers-by, which contrasted favourably with the physique and gait of the denizens, and even with the lordly and somewhat arrogant bearing of the Turks, who, as lords and masters, looked with a lofty disdain on the *habitués* of this, the pleasantest quarter of the city of the "good Haroun al Raschid."

The Kaldain, or Chaldœans, the people referred to, inhabit a mountainous tract stretching eastward of the district of Amadiyah between Lake Van and the Taurus. According to their own account, they were converted to Christianity by St. Thomas and two of the seventy disciples. By means of a rigidly enforced system of exclusion they have preserved their freedom as a republic; their religious tenets and simple liturgy have also remained nearly unchanged since the introduction of Christianity.

The hardy ife of these mountaineers has produced in them an open and erect bearing, in striking contrast to that of the sensuous, effeminate races of the plain. The Chaldœan is courageous and revengeful abroad, though kind and hospitable at home. A constant state of warfare, or of preparation to resist attack, has rendered him ferocious towards enemies, and even towards peaceable strangers; but the knowledge of Christianity, imperfect as it is in that country, has, notwithstanding this and other faults, made him superior to the Asiatics of the same class, who follow the Mohammedan creed.

The diet of the people is almost entirely vegetable, the favourite dish being boiled rice and sour milk; their houses are scattered along the sides of the hills, amidst groups of fruit and other trees, and are clean and commodious. They are roofed with ponderous logs of wood, which again are covered with several feet of earth, just as described in Xenophon's "Expedition of Cyrus," Book IV. The women are allowed much freedom, and do not cover their faces; and in the evening it is customary for them, after having completed the cooking and other domestic duties, to join the family circle. The inhabitants of the hilly tracts of Kurdistan, like most Eastern people, are unostentatiously hospitable,

and will readily share their rough fare, consisting often of only coarse bread made of acorns and milk, with the wayfarer. In the interior of the Chaldœan country are terraces cultivated with rice or other grain, with a succession of deep, dark wooded valleys between high and rugged Alpine ranges, which rise to the uplands beyond the backbone of Kurdistan. A practice obtains among the Chaldœans of sleeping in summer not upon the roofs of houses, as is general in Mesopotamia, but upon a frail scaffolding of four poles, supporting a floor, sometimes small, sometimes large enough to contain a whole family. These bedsteads are 10 ft. to 20 ft. in height, sometimes in the fields, even amid rice grounds, but often upon the crest of little hills, or in places exposed to the wind; by this means they avoid to a certain extent the musquitoes, which abound throughout Kurdistan.*

Fish is abundant in the Izani and other streams in this beautiful country, which bears a singular resemblance to some portions of Switzerland. From the plains of Mesopotamia to the height of 1,000 ft. is the zone of the wild vine, pistachio, oleander, rose, and plane tree. Here also are cultivated the melon and rice, the staple articles of food, with maize. Everywhere the surface of this portion of the country is cultivated, overgrown with mulberry-trees, or studded with the pretty chalet-like cottages of the mountaineers. Every available spot of ground is cultivated in terraces, rising one above the other, and the rocky interval that separates them is covered with fruit trees or tall poplars for building purposes. The system of irrigation practised on these terraces is perfect, and must necessarily be so to insure the submersion under water of the rice crops. From an elevation of 1,000 ft. to 4,000 ft. is the zone of oaks; here, also, grow pears, apples, plums, and other fruit. Near the snow-line we come upon a vast growth of fennel, which is gathered by the peasants, and constitutes the winter stock of provender for the cattle. When green it is chopped and put into sour milk, to which it gives a pleasant aromatic flavour.

At the line of perpetual snow grows a vegetable known as the goat's beard (*Iragossogon orientalis*), upon which are fed the numerous flocks of goats and sheep, as well as mules. Its white stem, when first appearing in spring, is abundant in the market of Mosul, where it is brought from the plains east of the Tigris; and, although wild, it is incomparably the best vegetable which this

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* Mr. Ainsworth's "Visit to the Chaldœans." Part I., vol. xi., of *Journal of Royal Geographical Society.*

country affords. The stem makes a pleasant salad, and in the mountains is peeled and eaten raw.

Another race which inhabits the hilly tracts of Kurdistan is the Kurd, or, more properly speaking, Kermanji, for the European name is unknown among them. They are Mohammedans, and are indeed a very remarkable people. Nearly every male Kurd is mounted and armed, generally with a gun and sabre, or pistols stuck in a showy vest; the dress of the well-to-do classes usually consists of loose robes and short leggings, while on the head is worn a gaudily-striped turban hanging loosely on one side. The poorer orders carry javelins, about 3 ft. 9 in. in length, or a bow, resembling that of Turkomans, nearly 6 ft. in length, which is slung at his side ready for use, with a supply of arrows in a leathern quiver at his back. Some still use the sling employed by their forefathers thousands of years ago, and referred to by Xenophon. The Kurds are decidedly inferior in the social scale to their neighbours, the Chaldœans, and much of this is doubtless due to the influence of their respective creeds, though the Chaldœans are little more than nominal Christians, the mass of the people knowing and caring nothing for their religion. Some of the Kurds are steeped in the deepest poverty, living almost entirely upon wild plants. Their principal diet is the stem of the fennel, gathered just as it issues from the ground near the snow-line, and stalks of rhubarb, the acidity of which is not unpleasant. Fortunately milk is plentiful, and occasionally they regale themselves with animal food.

Wild goats abound on the mountains of Kurdistan, and there are also bears with a dun-grey fur, and foxes.

One of the chief products of this Alpine region is honey, which is found in holes underground, or in hives made of mud; the quality is remarkably fine and the quantity plentiful. From it is produced a fragrant wax to such an extent that it is sold to the people of the plains in large quantities. Besides this article of export, the valleys produce silk, cotton, and Indian corn. But the most remarkable production of Kurdistan is the celebrated vegetable known here by the name of Mauna, which, in Turkish, is called *Kudret-hal-vassiz*, or the Divine sweetmeat.* It is found on the leaves of the dwarf oak, and also, though less plentifully and scarcely so good, on those of the tamarisk, and several other plants. It is occasionally deposited on the sand, and also on rocks and stones. When thus found it is of a pure white colour, and

* Lieut.-Col. Chesney's "Expedition for the Survey of the Rivers Euphrates and Tigris."

appears to be more esteemed than the tree mauna. Mr. Rich, in his account of the country,—and he is a very high authority, for he was many years the learned and much-respected Consul-general for this country at Baghdad,—seems to think this is another kind of mauna; but Mr. Hormuzd Rassam, also a high authority, considers it to be the same, with the simple difference of being free from the leaves and other impurities taken up with it when shaken from the trees or plants.

Mauna is collected chiefly at two periods of the year: first, in the early part of spring, and again towards the end of autumn. In either case the quality depends upon the rain that may have fallen, or, at least, on the abundance of the dews; for, during seasons of drought, it is understood that little or none is obtainable. In order to collect the mauna, the people go out before sunrise, and having placed cloths under the oak, larch, tamarisk, and several other kinds of shrubs, the mauna is shaken down in such quantities from the branches as to give a supply for the market, after providing for the wants of the entire family. The Kurds not only eat mauna in its wild state, as they do bread or dates, but the women make it into a kind of paste, when it resembles honey. In this state it is added to other ingredients used in preparing sweetmeats, which, in some shape or other, are found in every house throughout the East.

The mauna, when partially cleaned, is carried to the market at Mosul in goat-skins, and there sold in lumps at the rate of $4\frac{3}{4}$ lb. for about $2\frac{1}{2}d$. For family consumption, or for export to distant parts, it is first thoroughly cleansed from the fragments of leaves and other foreign matter by boiling.

In the natural state it is of a delicate white colour, and of a moderate but agreeable flavour. It is well described in the Bible (Numbers, chap. ii., v. 7) as being like coriander seed. Calmet, in his dictionary, says that it is met with not only in Arabia, but also in Poland, the mountains of Lebanon, and other places. Burckhardt describes it in his "Tour in the Peninsula of Mount Sinai," as being of a dirty yellow colour, slightly aromatic, of an agreeable taste, sweet as honey, and being of the nature of a purgative when eaten in any quantity. This great traveller says that the Arabs esteem it as their greatest luxury, and that the season for collecting it lasts six weeks.

C. R. Low, Lieut.

THE PROGRESSIVE PHYSICAL DEGENERACY OF OUR TOWN POPULATIONS.

[Read before the Social Science Association, at Leeds, Oct. 10, 1871.]

Part II.

Certain political leaders and pseudo-economists would persuade us that the freedom of trade and adventure must not be interfered with, and that the unhappy victims, who are mostly the very poor, must learn to protect themselves against a host of active and clever falsifiers of food!

I shall say but little about intemperance in alcoholic and fermented liquors, because the prevalence of intoxication, its increase with that of pauperism, and its debasing effects, mental and bodily, on its victims, are notorious facts.

Every physiologist knows that the effects of alcoholism on the nervous and circulatory systems are cumulative, and intensify as habits of intemperance are continued from generation to generation, the progeny of the drunken being generally more feeble, vicious, and liable to disease of mind and body than their parents.

Whilst we ought to support Mr. Dalrymple's laudable efforts to procure some preventive legislation against habitual drunkenness, I believe that the primary cause of the evil is to be found in the house accommodation of the poor (of which I am about to say more), and that until the dwelling-places of the working classes are reformed, intemperance cannot be effectively dealt with.

II. *Labour and Employment.*—The conditions of labour in the manufacturing districts are doubtless more favourable to health than they were half a century ago. The operation of the Factory Acts, which at first were denounced with the utmost vehemence by the same class of politicians as those who now oppose interference with fraudulent traders in food, has been most beneficial—especially for women and children—in diminishing the hours of labour, in improving the construction and ventilation of mills and work-places, in protecting the workers against the injurious effects of certain processes, in fencing machinery, and in the half-time system of education.

But while, under these reforms, a generation has grown up less injured by the mighty Moloch of steam power, with fewer deformi-

ties and organic lesions, and somewhat longer lived, the total number of persons subject to the debilitating and enervating influence of in-door employment has enormously increased, and still increases, year by year.

While large numbers of the best of our population emigrate or colonize, the great town populations are continually swelled by immigrants from the rural districts. Hence the process of deterioration in towns has been somewhat checked; but the pale, anæmic, and slender forms of the mill and factory workers still contrast painfully with the ruddy and sinewy, though ill-fed, children of agricultural labourers.

Dr. Morgan, of Manchester, in the paper before referred to, said that he had been much struck by the difference in physical development between the indigenous population of the town, and those who had migrated into it in adult life. He also observed that the deterioration was to some extent proportioned to the length of time during which his patients or their ancestors had been exposed to the lowering influence of a city life and in-door occupations.

Now that the main provisions of factory law are extended to workshops, and nearly every kind of congregated labour, we may hope for a further and more general rescue of the younger and weaker portion of the working population from the depressing effects of ill-regulated employment.

With reference to the half-time system of education under the Factory Acts, I would just remark that it is incomplete, until military drill be made a condition of State support to elementary boys' schools.

III. The conditions of dwelling, in our great centres of commerce and manufacture, are, I believe, the most destructive of the influences* now at work in producing a lower type of Englishmen.

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* The destructive influences at work in the dwelling places of the million include Soil-poisoning, Water-poisoning, and Air-poisoning. The *physique* of the people tends inevitably to deteriorate—(1) where the *soil* is wet or chemically bad, or where it is sodden by decomposing filth; (2) where the *water* for domestic use conveys injurious matters, inorganic or organic, from the soil, or is polluted by sewage, by the offal of slaughter-houses, or by the refuse of trades and factories, or where it distributes lead from pipes, or metallic and organic matters from roofs; (3) where the *air* within dwellings is vitiated by the overcrowding of inmates, by the want of common cleanliness, by sewer gases which often convey specific infections, or by arsenical fumes from wall-coverings; and (4) where the *atmosphere* outside of dwellings is defiled by smoke and noxious vapours from mineral and manufacturing processes, by middens and other putrefying accumulations, and above all, by the exhalations of an excessive population, the density of which in some of our worst town districts is not less than 1,000 persons to the acre.

I will not detain you by describing these conditions. They are well known to most of those who concern themselves with the subjects of this Department. I will merely call attention to some important and reliable evidence as to the fearful change which those circumstances are effecting in our town populations.

(1.) Dr. Druitt, President of the Association of Medical Officers of Health in London, said before the Royal Sanitary Commission :—*

"There is a general lowering of health, a degradation, as it were, of the whole system and character from overcrowding." (8997.)

"Where many human beings are put together on an inadequate space of land, they can never get out of the odour of their own breath and of their own excretions." (9001.)

"There is a general deterioration of the stock, if I may so call it, of the human plant." (9009.)

"If I go into any crowded part of our parish, I meet children whose bones are bent and whose foreheads are prominent, and who show all the signs of what is called rickets." (9010.)

"They may have mental precocity and sexual precocity. I have seen instances of that combined with the worst possible physical development." (9012.)

"I have seen a healthy father and mother, whom you would take as types, living in a confined room where they had to perform all the offices of nature, living and sleeping, and so on, together, and I have seen them produce children which were born apparently healthy, but which gradually withered and became ricketty and scrofulous ; and, therefore, without underrating the influence of vice in the parents, I believe that overcrowding by itself will stunt the human race." (915F.)

(2.) In Dr. Morgan's description of patients among the lower classes of Manchester, he mentions the singular want of stamina which characterises them as a class. Thus :—

"Instances in which the muscular system is fully developed or well strung are remarkably rare. Few are men of that calibre from which we might expect either vigorous and healthy offspring, or arduous and sustained labour. Cases of deformity, accompanied by actual distortion, are not uncommon, while minor physical defects, denoting constitutional ailments, are deplorably frequent."

Their weak, excitable, irregular, and rapid circulations, cold extremities, blanched lips, and colourless cheeks, indicated to Dr. Morgan the impoverished state of their blood. Their liability to neuralgia and involuntary convulsive movements, showed an enfeebled nervous system.

"In others, again," he observes, "the teeth are no sooner developed than they begin to decay, enlarged glands protrude from the neck, the skin looks dry and parched, the hair scanty and withered."

(3.) One more witness shall be cited.

Professor Gairdner, the Medical Officer of Health for Glasgow,

* Second Report, Vol. III., pp. 30-40.

informed the Sanitary Commission that overcrowding, which is on the increase in that city, *from the want of space for building* (8202)

"creates special diseases, and demoralizes the people; and in the course of generations it completely overthrows the *physique* of the population. It is impossible to walk through the central streets of Glasgow without observing that you are in contact with a population awfully degraded both in its moral and its physical attributes." (8204.)

Describing the demoralization of the young in the over-peopled dwellings and streets of Glasgow, he said:—

"If I were to pitch upon one thing that is the cause of the epidemic disease, and physical and moral degradation in that population, I should say it was the system of house-construction, such as we have had for the last three or four generations in Glasgow." (8255.)

My conclusion from all this evidence, and from facts observed by myself, is, that comprehensive, yet cautious, measures are necessary for the improved house accommodation of the working classes of our great towns over larger areas of habitation; that, as for the overcrowding of persons in a house, so also for the overcrowding of houses on a given area, there should be a limit to density of population fixed by law, at all events, in the building of dwelling houses on fresh ground, as well as in rebuilding them on ground previously occupied; and that, for the success of such measures, the establishment of superior administrative authorities, with adequate powers, is as essential as it is for the execution of measures intended to prevent the adulteration and to secure the good quality of Food; or, again, for those which protect Labour from abuses and unhealthy conditions known to sap the vigour of the race.

H. W. Rumsey, M.D.

MARKETS OF THE MONTH.

Since writing my last report, the meat market has been dull, and prices have been easier, affecting, however, only wholesale transactions at per stone; the butchers evidently not finding the difference sufficiently material to enable them to give their customers the benefit of a reduction in the price per pound. This state of the market is perhaps due to an increased number of foreign cattle being offered for sale, and is probably of a very transient nature. Bacon has also followed suit, and is slightly cheaper. Good fresh eggs at this season of the year are always dear, and are worth three halfpence each; French eggs, 9*s*. per hundred. Eggs and walnuts, it should be remembered, are usually sold at six score to the hundred; but oranges, at 105 to the hundred. Fresh butter has attained the apogee of extravagance; 2*s*. a pound for good butter —which is a very scarce article now-a-days, farmers' daughters giving more attention to the drawing-room than the dairy—is not at all dear. Lobsters are very scarce. Turbots and such like fish are dear at this season; they are cheapest in the spring months. I have seen some excellent Brighton mackerel sold for 3*d*. each, small, but of very good quality. Smelts, too, are in very good condition; and so is cod fish, though it is rather higher in price than it was last month. The East coast fisheries have sent abundant supplies of herrings to market. When this report appears, sprats will have entered an appearance. Rub them in flour, grill them, and eat them in the kitchen, if you wish to taste the "poor man's fish" in perfection.

Everything will, of course, become dearer towards Christmas, especially poultry, as almost every family contrives to indulge in a turkey, a goose, a couple of ducks, or game of various kinds at the festive season. Our markets will exhibit large quantities of game, poultry, and other delicacies during the week before Christmas, and thus are well worthy of a visit at that time, the vast stores of good things provided for the delectation of the multitude, presenting an appetising and pleasing appearance. Leadenhall and Covent-garden are especially interesting, and should be seen by everybody, at least once in a lifetime, two or three days before Christmas Day. But

for the present grouse still remain very cheap; excellent birds may be purchased for 2*s.* 3*d.* Partridges are dear, as I have before reported, young birds especially. I will only remark, that as the season advances, turkeys and geese are brought to market more plentifully and in better condition, and so on an average command better prices than they did last month.

Wild fowl, too, is sent from Holland in large quantities during the winter months, prices now being for wild ducks, 2*s.* 3*d.*; teal, 1*s.* 3d.; widgeon, 1*s.* 6*d.*; golden plover, 1*s.* 3*d.*; black plover, 10*d.*; but snipes are scarce and dear, the price varying every day from 1*s.* 3*d.* to 2*s.* Black game fetch 3*s.* 6*d.*; pheasants, which are plentiful and wonderfully weighty birds, from 3*s.* to 4*s.*; woodcocks, 3*s.* 6*d.* to 4*s.* Those turkeys and geese which bid fair to attain to a gigantic size are carefully tended, and kept back from the market until Christmas time, when the producers very well know that they will command almost fabulous prices. Wildfowl killed in this country fetch, on an average, 3*d.* per head more than foreign fowl.

The state of the market, as regards apples and potatoes, remains very much the same as it was at the time of last report; there has been no rise in price because the holders have been desirous of effecting sales, as it is almost a universal complaint that the quality of this season's growth deteriorates rapidly. Samples of potatoes that, when pitted, were apparently free from disease, when unearthed are found to possess a considerable number of unsound tubers. Apples for cooking purposes are making 27*s.* 6*d.* per cask of three bushels in Covent Garden. This fruit does not appear to keep well; so that we may anticipate a considerable rise in price after Christmas, as by that time fully two-thirds of the entire stock in the country will have been disposed of. The last Borough and Spitalfields quotations are for Regents, from 80*s.* to 110*s.*; flukes, from 120*s.* to 140*s.*; rocks, from 70*s.* to 80*s.*; Victorias, from 100*s.* to 120*s.* per ton. Normandy pippins have experienced an immense reduction in price since their first arrival. Champignons, in pint tins, such as are largely used in the kitchen, have only arrived within the last week. The stock of last year had been entirely exhausted, and orders could not be executed at any price; and now the new supplies command twice the usual price, viz., 2*s.* per pint tin. Portugal onions are cheap, good, and sound. Oranges, lemons, figs, and other dried fruits do not require any particular notice, except that the market is plentifully supplied with them. The flower market has been quiet, and there has been no material alteration since my last report.

Nov. 15. P. L. H

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

FRENCH VEGETABLE SOUP.

Take 2 carrots, 2 turnips, 2 onions, 2 heads of celery, 2 potatoes, ½ pint of split peas, 2 pints of water (or better still, broth), 2 or 3 cloves, and a few white pepper corns. Boil all together till smooth, and pass through a sieve. When served, add a pint of cream and milk.

OYSTER SAUSAGES.

Take ½ lb. lean mutton, ¾ lb. beef suet, ½ lb. oysters, scalded and with their beards taken off. Chop all up together, add the yolks of 2 eggs, season with salt and pepper, and make up in the form of sausages, frying lightly in the usual way.

SALMON CRUMBS.

Under this name, a dish prepared in the following manner is much in use, and greatly esteemed in the north of Ireland:—A quantity of cold boiled salmon is divided into very small fragments and mixed with bread crumbs, an egg or two well whisked, butter, salt, pepper, and a little vinegar; after which it is put in a pudding dish and baked in an oven. The proportion of the ingredients is not very definite, but is variously regulated according to taste. Vinegar is often used along with it when it is eaten.

MINCE-MEAT.

Take roast or boiled beef (chopped fine), 1 lb.; beef-kidney suet (do.), 1 lb.; raisins (stoned and chopped), 1 lb.; currants, 1½ lb.; apples (chopped very fine), 1 lb.; moist sugar, 1½ lb.; candied peel (shred fine)—citron, ½ lb., orange, ¼ lb., lemon, ¼ lb.; ground ginger, ½ oz.; alspice, ½ oz.; salt, ¼ oz.; the juice and peel (grated) of two large lemons; one nutmeg; ¼ pint of brandy; and 6 oz. of sherry. Mix the whole.—*From an old family recipe.*

BIRD'S NEST PUDDING.

Peel and core with a scoop enough apples to cover the bottom of the dish; fill the holes of the apples with sugar, and sprinkle one ounce over them; add a quarter pound of sago, a little lemon peel and nutmeg; cover the whole with water, and bake it within a quick oven for about one hour. If eaten hot, let it stand five minutes after being taken out of the oven.

AMERICAN WAFERS.

Let ½ lb. flour, ¼ lb. butter, ¼ pint of warm milk, and a little salt, be all well mixed together and rolled very thin. Make the irons hot, and bake the wafers a light brown. They may be varied by adding a little sugar and carraway seed to the dough.

NOTES OF THE MONTH.

A NEW cheap dining hall has been opened in Norton Folgate by Mr. Wackett, which promises well. The undertaking was inaugurated by an excellent supper, presided over by the Rev. Mr. Baird, of Homerton, and attended by over 200 of the working men of the neighbourhood. Australian meat figured largely in the entertainment, and met with great approval; and Mr. Wackett informed his guests that he should be able to offer a substantial dinner for sixpence, or even less. We wish most heartily that similar arrangements might be made in Manchester, Liverpool, and other large towns, where the population is so manifestly underfed.

THE Colony of Victoria has at last began to feel that one of the sins of the Old Country has taken root, viz., the sin of adulteration. Fortunately, the authorities do not seem disposed, like ours, to palliate or condone the offence, for they summoned 18 bakers from Carlton on the charge of adulterating bread. According to the Government analytical chemist, the loaves contained from $5\frac{1}{2}$ gr. to 22 gr. of alum to 1 lb. of bread. Others contained potatoes—*ápropos* of which, the *Australasian* says, "We do not object to pay a fair price for our bread and for our potatoes also, but we like to buy them separately, for reasons which will be readily understood when we say that the price of flour is at present about 16*l.* 10*s.* per ton, and that of potatoes about 2*l.* or 3*l.*" The offenders were nearly all fined 20*s.*, with 40*s.* costs. We give the following hint to the Victorian authorities:—Robert Bassett, Lord Mayor of London in the 16th year of Edward IV., "did sharpe correction upon bakers for making bread otherwise than of floure and light of weight, and caused divers of them to be put in the pillory: also one Agnes Daintre for selling of mingled butter."

MR. EDWARD WILSON, of Hayes, writes to the *Times* to detail the results of some experiments that he has made respecting the real difference in price between English and Australian meat. It puts the question in a new light, which we fancy has not occurred to many people. He says: "In a comparison between the cost of butchers' meat purchased at the shops, and preserved meat imported from Australia, your contemporary had quoted the difference at about a third of the English price. My little experiment seemed to show that the difference was more nearly twice that amount. Wishing to know exactly what was the loss in cooking, and what the proportion of bone in an ordinary joint, I had a leg of mutton weighed as it came from the butcher's, weighed again when roasted fit for the table, and I then had the meat accurately pared off, and it and the bone weighed separately, with the following results:—Leg of mutton before roasting, 9 lb. 10 oz.,; ditto after roasting, 6 lb. 12 oz.; weight of cooked meat, 4 lb. 13 oz.; bones, 1 lb. 15 oz.; gravy, 10 oz. By this calculation we find, what probably our thrifty housekeepers know, but very many of us do not know, that if we pay the butcher $9\frac{1}{2}d.$ per lb. for a leg of mutton, the cooked slice of mutton on our plate costs us about 19*d.* per lb.; and that we must compare English meat at that rate, with Australian meat, cooked and without bone, at 16*d.* or 17*d.*, to judge justly between them."

We have received a copy of a Report by Dr. Trench, health officer to the Corporation of Liverpool, dealing mainly with the question of adulteration which is terribly prevalent in Liverpool, as elsewhere. Dr. Trench makes an excellent protest against the opinions of those medical men and politicians who condone, so to speak, the offence of adulteration, simply because opinions differ as to the amount of injury inflicted on the purchaser. The Report is so valuable, that in our next number we shall refer to it with greater minuteness.

Laver.—This is not likely to become a popular dish, for like olives, it is "caviare to the vulgar." It is, however, much admired by those who have once acquired a taste for it, though something depends upon the mode of dressing it. The laver to which we allude is not the crude state of the seaweed as gathered on its native rocks, but as it is sold by the so-called Italian warehouses. The following is the most approved way of preparing it:—A sufficient quantity is placed in a perfectly clean saucepan with a few spoonfuls of stock, but only just enough to moisten it, and prevent its burning. When it is thoroughly warmed some lemon juice should be added, but with caution, and after a few moments' additional heating, poured out upon fresh made toast, either plain or buttered, and served as rapidly as possible. We believe that there is no better mode of preparation, and it is one which has been practised within our personal knowledge more than sixty years. Butter is sometimes added, but if so, it should be perfectly fresh.—*M. B.*

Messrs. Longmans have just published a small volume by Mr. Banister Fletcher, architect, on the important subject of model houses for the industrial classes. The author insists on two points: first, that such houses should have something artistic in their character, and not be made to resemble barracks or workhouses; and secondly, that it would be good policy to alter many old houses in such a way as to fit them for letting in flats or floors to different families. The work is evidently that of a man who has studied his subject well, and contains a number of original plans for new houses as well as for the alteration of old ones. One feature in some of the model houses is objected to, we think, with great justice, namely, the outside staircase. Working men, like others, do not wish to be stared at by all the world; and why these staircases should be constructed fronting the street it is impossible to imagine.

The Kava or Ava is well known as a favourite intoxicating drink of the South Sea Islanders. The extraordinary and disgusting mode of preparing this beverage, by chewing the root, ejecting the saliva into a bowl and fermenting it, has been the means of giving it a greater amount of publicity than it would have otherwise obtained. Many stories have been told about its uses and effects. It appears that at one time before the intercourse with foreigners the only intoxicating drink known to the natives was the water in which the roots of the kava plant *(Macropiper methysticum)* had been macerated, and this was comparatively little used, except as a medicine, as it was supposed to prevent corpulence. Since the introduction of foreign spirits into the islands the use of kava has much diminished, though intoxication is none the less common, and with many of the natives kava is still much appreciated, and even many of the lower classes of white people are confirmed kava-drinkers. It is said that, if drunk in excessive quantities, it produces numerous cutaneous diseases, but if taken in moderation has no ill-effect upon the system. A drink, prepared in a similar filthy manner, is the South American Piwarri, which is produced by first chewing a sufficient quantity of cakes made of cassava meal (*Manihot utilissima*), and then putting the masticated material into a bowl with water, where it is left to ferment for some days, and finally boiled.—*Nature.*

THE

FOOD JOURNAL.

MEAT FROM OUR COLONIES.

Looking back through the past year at the changes which our food supplies have undergone, we cannot but be very much struck with the satisfactory progress made in the use of colonial meat. Although at present it is nearly all Australian, it is not entirely limited to that prolific country; and we fully expect that during the year 1872 supplies will be forthcoming from other colonies besides those of Australia. One great object of writers in the *Food Journal* and the public press generally, is to facilitate the introduction of cheap food to the English public; and on taking a review of the year in this particular, we cannot but remark how great has been the prejudice to be overcome, and the success which has attended the efforts to overcome it. We may congratulate ourselves that the meat which ignorant people still stigmatise as cheap and nasty is making a most rapid progress in the affections of the public, and that meat-preserving bids fair to become one of the greatest of colonial industries. In the first number of the *Journal* (Feb., 1870) we gave a brief account of the various processes which have been in vogue for preserving meat, many of which have failed in one way or another—some for physical, others for commercial reasons. In fact, it may be stated in general terms that the more elaborate were the mechanical or chemical appliances, the greater was the failure; and although we have several different processes now in operation, that which is simplest seems to be the best. In Australia most of the meat is preserved by what is known as the chloride of calcium process, in which the atmospheric air is expelled from the tin, and the germs of decay or putrefaction are destroyed; and whatever are the varieties of different modes, this expulsion of air and destruction of germs form the basis of nearly all of them. One great reason for the increasing demand is this—that the public are beginning to find out that the Australians are now very careful in the quality of the meat which they send us. Formerly, any rubbish was good enough, and the necessity for

exercising this scrupulous care was not sufficiently recognised by our colonial friends. Occasionally, it is true, a bad tin is met with; but it may be easily recognised by the want of concavity in the cover, and the purchaser may generally guard himself against it. The great objection to the meat—viz., its appearance — still remains, and arises simply from its being somewhat overcooked; but for all that, the nutriment is there and obtainable, as a recent letter in the *Times* pointed out, for 6½*d.* per lb., instead of about 1*s.* 8*d.*, which is the true value of a pound of prime fresh mutton. One of the most common questions put to us on this subject is—What meat preserving company supplies the best article? This is really a most difficult question to answer, for where all are so good, "caparisons are odorous," and we recommend that the intending purchaser should try the companies all round, as we have done. The principal ones of which we have cognizance are the Melbourne Company, which, according to a report in the *Australasian*, slaughtered in six months some 85,000 sheep and 3,500 oxen. The Victoria Company, up to the close of the half-year ending March 24, had preserved 240,000 tins, and killed about 1,000 sheep a week. Several other firms have commenced proceedings in Victoria with more or less success; and in Queensland Mr. Tooth preserves the meat known by the brand of the Clifton Darling Downs. A company has also lately been formed at Adelaide in South Australia. Most of these meats we have personally tried and found admirable. The purchaser has seldom much choice offered him in the retail shops, most of which only keep one particular brand; but we may mention that there is a preserved meat shop (Sanders, 222, Holborn) which, we believe, furnishes the greatest variety of samples in London. The brands which are best known and the most generally reliable are those of the Melbourne, Victoria, and Ramornie companies, and that of Mr. Tooth, but it is fair to say that we have tasted meats of other firms which were scarcely, if at all, inferior. Within the last month two jont-stock companies have appeared, the one for preserving meat by Mr. Richard Jones' vacuum process, and the other for meat preserved on Mr. Henley's pressure principle. Viewing all these facts, there is no doubt that the ball has been set rolling, and it only remains for those who are interested in the question in England to establish some organised arrangements by which the public shall benefit systematically and continuously.

CORNISH CONTRIBUTIONS TO THE FOOD SUPPLY.

"All the world," we may well suppose, has heard of Cornwall as possessing great mineral wealth treasured up in its soil. For many centuries that soil has been caved, dug, honeycombed, and wrought in successful search for copper and tin. Of these there has been, and still is, a perennial harvest-yield. In spite of the emigration which, within the last decade, has to some considerable extent reduced the population of the Duchy, Cornish mining is still a recognised and thriving department of human industry. Indeed, a mere casual observer travelling, let us suppose, westward from Plymouth by rail, might almost be led to suppose from the nature of the scenery, so rocky and rugged, and, moreover, so plentifully supplied with buildings evidently pertaining to mines, that this occupied the sole attention of Cornish men, instead of being simply a principal occupation.

To think thus, however, would be to fall into somewhat of an error on the facts of the case. Cornwall plays a really important part in relation to the general food supply of the country at large. It must by no means be forgotten that the county in question has, and in the very nature of things is bound to have, certain not inconsiderable advantages in regard to climate. It stretches, in relation to the map of England, far to the south and far also to the west. The sea, or rather the broad ocean, washes its shores on three sides. These climatic conditions operate so favourably that extremes, whether of heat or of cold, are practically little known or experienced. Severe or long-continued frost is here a very rare phenomenon, and it is very seldom that snow lies long upon the ground. This was true even of last winter, exceptionally severe in most parts as it was. We experienced our share of its bitterness in Cornwall also, yet the main conditions of our climate remained as just described. It must at the same time be confessed that we are liable to cold and biting winds from the Atlantic; and we are subject also to a considerable amount, at times, of heavy and driving rains, the effect of which on certain kinds of tender vegetation is more or less disastrous. Still, all this being true, our county, in some of its parts more especially, and in some particulars, is none the less a market-garden for other portions of the

country less favourably situated than itself. In the springtide of the year a very extensive trade is carried on between West Cornwall and London itself. Tons upon tons of early broccoli are transmitted by rail. So large is the demand for this article of traffic that it is grown on a wholesale scale as a field crop. It is systematically packed in large hampers, and in its season is daily sent off in vast quantities. Early potatoes, again, are another marketable commodity and object of cultivation under similar conditions. It is stated, indeed, that in Cornwall and the Scilly Isles (which may be considered as pertaining to Cornwall) this crop can be harvested ten weeks earlier than in the midland districts of England. This fact gives ample and striking testimony to the mild and equable character of the climate, in Western Cornwall more especially.

Horticultural industry has, it may well be believed, a great future of possible development in Cornwall. Much has already been done, as the records of commercial operations under this head may be adduced to show; much more, however, it may be, yet remains to be done. Great quantities of "waste" land have already been reclaimed in Cornwall, and have been made to yield up a fullness of supply for human sustenance, instead of the heath, fern, and brambles, which erst-while were their richest products; but a very casual inspection reveals the truth that Cornishmen have not yet used up all their store of means in the way of reclamation of their soil. There is no reason why it may not be made in many ways the garden of England. It will only require the faithful and persevering application of skill and science to realise in these matters all that can be desired. Hitherto comparatively little genuine horticultural science, properly so-called, has been brought to bear. It must undoubtedly be acknowledged that market gardeners, as a class, are very honourably distinguished for the amount of skill which they bring to bear upon the practice of their profession. Probably, no body of men better understand how to till the ground so as thoroughly to utilise it and make it yield the fullness of its fertility; yet, even these men, clever and intelligent though they be sometimes, are strongly prejudiced in favour of old and comparatively valueless modes of culture, and unwilling and incapable to adopt new, yet more commendable methods.

General observations such as these seem almost to suggest themselves in view of Cornish vegetable cultivation. Cornwall is not yet, like many other districts, formed into a mere agglomeration of large farms. There are multitudes of small agricultural holdings

of five acres or thereabouts, which, under ordinary farm (as distinguished from garden) culture, cannot be expected to be very valuable to their occupiers. How large might be their profitable yield, in every sense of the word, if they were generally devoted to the culture of esculents, and perhaps to some considerable extent of fruit also! By the way, it may here be remarked that pomology, properly so called, as distinguished from other branches of horticulture, has not yet received anything like the attention which it deserves in this country. We have been well enough contented to go on in the old grooves, or too often in what may be better called the old muddy ruts. Many fruits might, under conditions of scientific treatment, be grown successfully, and after the first investments of time and money, what are now regarded as the expensive luxuries of the few fortunate persons who can command a supply of them, might become a large popular supply. How many sunny walls are there here in Cornwall, as well as in other parts, on which year by year might be grown splendid crops of luscious wholesome fruit; what pears and plums—to say nothing of possible grapes, peaches, and apricots! The fact that high wind-storms often blow and scatter the promise of harvest abundance given by our large standard fruit trees planted in the open ground is no solid objection. For in truth there are ways and methods now in vogue whereby crops of fruit can be almost ensured; being grown on trees trained to manageable dimensions, and capable of being protected from stormy violences.

Again, there is a point of possible food supply in regard of which Cornwall ought to do a great deal, but it is to be feared actually falls very far short of its powers and duties, viz., the rearing of poultry. Wherever there is a pretty central market, there are quotations of prices for fowls, ducks, and geese no doubt; *e.g.*, turning to the *Western Morning News* of October 14, 1871, prices at St. Austell are thus reported:—"Geese, 9*d.* per lb.; ducks, 5*s.* per couple; fowls, 3*s.* to 4*s.*; eggs, six for 6*d.*" Now the feeding and rearing of general poultry-stock is just one of those profitable measures of industry which might, properly managed, be made to "work in" admirably with that market-gardening which I have now been endeavouring to illustrate and recommend; yet, in Cornwall, for all the quotations of local prices in local markets, it is at a low ebb. The market in such a town as St. Ives, which is an ancient borough with all the paraphernalia of mayor and corporation and a representative in Parliament, does not contain a single stall devoted to the sale of poultry, nor is there such a thing as a poulterer's shop to be found in the place. This may be said to

be an extreme case, drawing an illustration from the seat of a fishery, yet the fact remains true all the same. Here we find a population of some thousands dependent upon a poultry-supply of the most casual kind possible. Now it ought not to be possible to find any place of which this is true; except, perhaps, in very remote and backward communities. Still less should it be true of a locality where it would probably be most easy, if people would only go the right way to work, to produce a supply which would greatly exceed the local needs. Indeed, judicious poultry-raising might be made a most profitable branch of industrial occupation, besides adding to the general stock of food in the country. In some localities this has been realised to a large and note-worthy extent. Aylesbury and its neighbourhood have, it is recorded, produced 40,000*l.* worth of ducks in a single season. Surely there is no condition so exceptionally favourable in any one locality as contrasted with others, as that this need remain an unapproachable achievement of success. It speaks well for the Aylesbury people that they have so largely served the public convenience in adding to the home-grown food-supply, and why should not others who have time, means, and skill (if they would only use them) emulate their example? One can but repeat, and "keep on" repeating, till attention to the requisite extent has been secured, that it is an object worthy of public, nay, of national attention, how best to increase and most completely to utilise home-grown supplies of food. This is a point on which the public intelligence stands in need of a good deal of education even yet. There is another branch of the general subject included under the title of this paper:—The Cornish Fisheries. These, however, present so many points of interest peculiar to themselves, that they deserve, and in due season may, I trust, by permission of the Editor, receive treatment in the *Food Journal* in a separate paper.

A. G.

Coloured Candies.—Some months since a great variety of the candies sold in New York were analysed by Dr. Endemann, assistant chemist to the health department of that city, and reported upon in the *American Chemist*. Reds were either carmine or aniline-red (both harmless). Blues were either ultramarine or Prussian blue (also harmless). Yellows were either saffron, chromate of lime, chromate of baryta, chromate of lead, gamboge, or vegetable colours. Of ten samples five were coloured with chromate of lead, and one with gamboge (both poisonous). Greens were harmless, so far as examined. Starch sugar is a common constituent of some kinds of candy, and starch is often substituted for gum arabic. In two cases gypsum was found to the extent of 3 and 6 per cent.; no other inorganic adulterations were detected.

SALT.

No. 1.

This invaluable ingredient of human food is not only found in every animal and vegetable product, but abounds in immense and exhaustless masses in the earth, constituting rocks of illimitable extent, supplying numerous salt-springs and lakes, and furnishing the mighty waters of the ocean with a sufficient supply of salt for human purposes, even if no other source existed. The most remarkable salt mines and works are those of Wrelicska, in Poland; Catalonia, in Spain; Louvre, in Hungary; Altemonte, in Calabria; Hallein, in Upper Austria; Tunis, in Algiers; and, though last, not least, Cheshire, in England, where brine pits were wrought in the time of Edward the Confessor. The salt works of Wrelicska are very extensive, the subterraneous excavations branching out for several miles. Thousands of workpeople are employed therein; while numerous dwellings, and even some chapels, are formed in the solid rock. The salt mines of Hallein, which comprise part of the Duremberg mountain, are likewise remarkable. They present the appearance of a honeycomb, having been worked for fully five hundred years. An interesting account of these mines and of the adjacent Noric Alps, which fringe the beautiful valley of the Salza, may be found in Barrow's "Tour in Austria and Lombardy." In some of the places enumerated the rocks consist of entirely pure salt, simply needing pulverization.

The chemical constituents of salt consist of a compound of chlorine and sodium. The ordinary culinary salt, when in a state of purity, is technically termed muriate of soda. A large proportion of deliquescent salts, as well as sulphate of magnesia, pervades the Scotch common salt, while that manufactured at Lymington contains a similar amount of impurities. There are different kinds of salt, and different modes of manufacturing it. For example:—

1. Bay salt, which consists of two kinds, the one prepared by evaporation from sea-water; the other from salt springs and lakes. The former method is practised in Hampshire, France, Spain, and Portugal; the latter in the islands of Cape Verd, and many parts of America.

2. Marine, or Newcastle salt, which is extracted from sea-water when boiled.

3. Brine, or fountain salt, prepared in a similar manner from brine, taken from rivers, lakes, etc.

4. White salt—one kind prepared from sea-water, after having been subjected to the sun's heat and exposed to the air; another kind, extracted from sand or stones, impregnated with saline particles.

5. Refined rock salt, boiled from a solution; and finally,

6. Salt-upon-salt, procured from an amalgamation of bay and other salts, and much used by the Dutch in preserving herrings.

Most of the above-mentioned preparations are comprised by Dr. Brownrigg under the denomination of *white salt*, although the different conditions in which these salts are held have obtained for them distinguishing appellations, such as baked or loaf salt, common salt, fishery salt, and shinery salt. The first of these is manufactured in Cheshire, and being of the finest, whitest, and driest quality, is best adapted for table purposes. The last kind, owing to its possessing a larger and firmer grain, is chiefly and most usefully employed in the preservation of meat. Dr. Henry, however, includes these varieties under four denominations, viz., stoned or lump, common, large-grained flakey, and large-grained fishery salt. Dr. Brownrigg, to whom I referred, is the inventor of an artificial method of promoting the evaporation of sea-water, and preserving the brine in English salt pits from being diluted with rain. In France little precaution is taken in protecting the salt works from wet, and hence the process of preparing salt is often greatly retarded.

The process adopted at the Cheshire and French salterns in the manufacture of stoved, loaf, or table-salt, is as follows:—The liquid, termed brine, having been first poured into wrought-iron pans, rather shallow, but of large surface, is placed over fires, and subjected to a temperature of 226°, just 14° above the boiling point of water, the presence of saline particles considerably inducing this intense heat. As the brine becomes hot, a white substance, similar to powder, occasionally tinged with oxide of iron, accumulates on the surface. This is created by the decomposition of certain calcareous matter which is decomposed by the heat, and to which, by the way, the workmen give the uneuphonious names of "scratch" and "pan-scale." A considerable portion of the impurity is either skimmed off or else collected in tiny pans fixed for that purpose at each corner of the boiler, though some of it sinks unavoidably to the bottom of the vessel. After a while the liquid becomes clear, crystals of salt form on the top, and in eight or ten hours are precipitated to the bottom of the pan by force of their

accumulating specific gravity, the principal part of the water meanwhile having undergone evaporation. The draught is then "cleared" from baskets or "barrows," so that the fluid portion may entirely drain off. It is next placed in a stove and thoroughly dried—a process that reduces its original weight—when it assumes that peculiar lumpy form from which it derives its name.

The common fishery, and other descriptions of salt, are prepared in a similar manner. The only difference is that they are not "stoved" after drainage, and that the evaporating process is conducted more slowly and at a much lower but variable temperature. For the purpose of drying the unstoved salt, it is placed in storehouses on sliding boards, called "drabs." After three or four days the brine becomes perfectly drained off. Sometimes, however, wooden troughs, perforated at the bottom, are employed for this purpose. In several of the extensive salterns of England, Scotland, and the continents of Europe and America, the evaporation of brine is superinduced by artificial heat. This process occasions a vast pecuniary saving in the cost of the manufactured article; a consideration by no means to be despised on various grounds.

In the preparation of brine salt, a variety of substances or "seasonings" are employed with advantage. These improve the grain, and render it more susceptible of crystallisation. They consist principally of flour, resin, butter, tallow, new ale, stale beer, beer and wine lees, and even alum. Occasionally the white of eggs, and the blood of sheep and oxen are brought into requisition, 1 oz. of the latter being sufficient to clarify 800 gallons of brine. For a long time alum and butter were used in Cheshire in order to correct the flakiness and softness of the salt manufactured from brine; additions subsequently superseded by the employment of resin. As the Scotch salt does not undergo clarification, it is consequently less pure than that prepared in this country. In Germany, all the leach-brine, or "bittern," remaining in the pans after crystallisation, as well as that procured from the basket-drainage, is thrown away as refuse. At the English salterns, however, a rigid economy is adopted, the "bittern" being added to the contents of the pans, and subjected to the process of boiling.

The English salt was at first greatly inferior to that manufactured in France. Not only so, but it was inferior to foreign salt generally. Shortly after the formation of the Royal Society, that astute and learned body devoted their attention to the improvement of this important culinary article, and with commensurate success. Early in the eighteenth century, a reward was granted by Parlia-

ment to one Mr. Lowndes, of Cheshire, for improvements which he effected in the preparation of salt. Owing to the repeal of the duty on this commodity, the Cheshire manufacturers are enabled to sell the article at the very lowest rate of profit, so that the proprietors of other salterns cannot possibly compete with them in the open market. Cheapness of coals, facility of conveyance, and the natural chemical qualities of the brine employed, are doubtless all in favour of Cheshire manufactured salt. The Cheshire basket salt certainly cannot be excelled for fineness of grain, whiteness of colour, and general chemical purity. The first salt mines were discovered in Poland at the close of the thirteenth century, but those of Staffordshire were not known for about four centuries afterwards.

If for no other reason, salt is remarkable as constituting the only mineral eaten by man. Not only does it afford an indispensable and wholesome condiment for our tables, but it forms an essential constituent of the blood, and supplies to the human system the loss sustained by saline secretions. It is grateful to the lower animals, and even to birds. For this cause the "salt licks" and salt lake springs of America are frequented by herds of buffaloes and other quadrupeds, as well as by myriads of doves, whose dulcet and plaintive notes are heightened by its effect. Indeed the virtue said to reside in the famous Cheltenham springs was first discovered by the owner of the property having noticed the resort of pigeons to the spot. From time immemorial salt has been successfully applied to sundry economical uses. Its antiseptic properties are invaluable; consequently, it is universally employed in seasoning or "curing" animal and vegetable substances. But although it preserves, it ultimately changes and deteriorates the quality of the food to which it is applied, rendering the same innutritious and indigestible; for salt, notwithstanding its being a strong stimulant to the animal fibre, is not convertible into nutriment. This is the cause why sailors, who subsist long upon salted provisions, are subject to the sea-scurvy, a malady not occasioned, as many suppose, by any unhygienic property in the sea itself—which is more salubrious than injurious, as I know from experience, having crossed the Atlantic ten times within four years—but by deleterious food, and probably pre-existing impurities of the blood. Singular to say, however, the residents near the sea coast of the Spanish peninsula are frequently attacked with leprosy. This loathsome and supposed incurable disease particularly appertains to Spain, where it is still very rife.

Common salt is applied to very diverse uses. Besides being

advantageously and universally employed in the preparation of meat, fish, and vegetables for human food, its acid and alkali are found to be essential in several chemical operations. It serves, for example, to fuse glass, which it purifies and whitens; facilitates the precipitation of the metallic parts of minerals in assays; is considered a successful remedy for the bites of venomous reptiles; and is employed, in conjunction with brandy, in choleraic affections. Several years since, Dr. Stevens, of Barbadoes, wrote a treatise on its curative properties, entitled "Salines in Cholera." When the fell Asiatic pestilence first visited these shores, brandy and salt was the popular remedy against its insidious action, and marvellous were the reputed cures thereby effected. According to the testimony of Boyle, "One of the eminentest physicians (of London) was wont, as an excellent secret, to employ in some of his choice remedies, that kind of saltpetre which he drew out of earth digged up in *churchyards*."

The peculiar antiseptic properties of salt, according to Sir Humphrey Davy, consist in the singular attraction which it possesses for water—so potent a decomposing agent—and in its capacity to exclude air. Its medicinal qualities are also remarkable. While all other saline preparations tend to cool, this but heats the body, and engenders thirst. Some years ago a medical man wrote a *brochure* in which he condemned the use of salt, attributing to it all the diseases to which flesh is heir. The poor fellow eventually committed suicide. Only lately a book has appeared in which the writer, who is a physician, recommends salt, as a sure antidote to the contagion of small-pox. Doctors of course will disagree; but as *variola* is acknowledged to arise from a diseased or poisoned condition of the blood, the due use of salt may possibly form a safe and effective specific.

Salt is not only an agreeable condiment, but also an indispensable requisite. When moderately used it acts as a gentle stimulant to the stomach, and gives piquancy and relish to our food. In Africa the high-caste children suck rock-salt as if it were sugar, although the poorer classes of natives cannot so indulge their palates. Hence the expression in vogue amongst them, "He eats salt with his victuals," signifying that the person alluded to is an opulent man. In those countries where mineral salt is not procurable, and where the inhabitants are far removed from the sea, a kind of saline powder is prepared from certain vegetable products to serve in its stead. Indeed, so highly is salt valued in some places—such as Prester John's country—that from its very scarcity it is employed as a substitute for money. The eminent African explorers, Mungo

Park and Burchell, make mention of the serious inconvenience which the prolonged absence of salt occasioned their parties. The former remarks, that "the long use of vegetable food creates so painful a longing for salt, that no words can sufficiently describe it;" while the latter avers ("Travels in South Africa") that he had sent ninety miles for a gallon of salt, which both himself and his companions regarded as a "valuable acquisition." So severe has the deprivation of this saline mineral been considered, that the ancient laws of Holland ordained that prisoners should be kept on bread alone, *unmixed with salt*, as the extremest penal punishment. However, the consequences were so alarming to the criminals thus tortured, that this inhuman injunction had to be rescinded. Many of the wretched creatures died from the effects of *entozoa* engendered within their stomachs.

S. Phillips Day.

[to be continued.]

The *Medical Times* states, on the authority of the Chairman of the Hertford Chamber of Agriculture, that children fed on the milk of diseased cows had suffered from a complaint similar to the "mouth disease." Dr. Alfred Packman, of Puckeridge, has treated several cases of this complaint, and mentions in a certificate that the patient "suffered from a peculiar eruption of the mouth, nose, and face, accompanied by sore tongue and throat, and salivation. I have no sort of doubt that the affection was caused by drinking milk of cows suffering from foot and mouth disease."

Dr. P. Müller, in an essay on Meat Extracts, considers that they are neither directly nor indirectly food, for they do not contain albuminoid matter, neither do the nitrogenous principles which they contain arrest dis-assimilation, that is, they do not prevent the waste of the organic matter which composes the body. In small doses, these extracts are useful by the stimulant action of the potassa salts, which promote digestion and circulation; in strong doses—too large quantity at once—these substances may have a very injurious effect. When given to convalescents from serious diseases, especially if the system is exhausted by prolonged abstinence, the potassa salts present in these extracts in large quantity will act more injuriously because the system has lost a great deal of chloride of sodium; instead of then promoting the nutrition, these substances will interfere with it—(1) by the direct action of the potassa salts on the blood globules, whereby the absorption of oxygen of these globules is greatly decreased; (2) by the predominance of such salts in the serum of the blood which only physically dissolve carbonic acid and do not allow the normal quantity of that gas to be exhaled, and thus impede the access of oxygen. Medical men should bear in mind that, if given alone, these extracts (and the same applies to beef tea) are no nutriment, and only tend to keep the convalescents weak and not only ill fed, but not at all fed.—*Chemical News.*

AT THE BISCUIT FACTORY.

After work and worry in the smoky city a few quiet days in a southern county, unharassed by business, without the reminder of tall chimneys, afford a striking and pleasant contrast. But even here manufactories are to be found, though cotton mills are not, and as we happened to be in the neighbourhood of one whose wares are famous everywhere, we took the opportunity to see—*the largest biscuit factory in the world.* As the geography, history, and mechanism of such an extensive manufactory, or rather range of manufactories, employing about 1,700 men and boys, but no women (or only some half-dozen), is not to be learnt upon a flying visit, we shall not attempt a detailed description. The label of "Huntley and Palmers' Reading Biscuits," in the windows of ambitious and enterprising tradesmen, has for us henceforth a real meaning, after our morning call at the excellently conducted works of those busy "friends," whose relations with their employés, we have other means of knowing, are of the happiest and most humane description.

But let us to our sightseeing. Weighed out in a room above, the proportions of each batch of dough for each kind of biscuit are delivered below in their appropriate conditions. Each set of ingredients are then looked after by the proper attendant, and kneaded in its appropriate machine acting in its trough or basin. Rolls of this prepared dough, of lighter or darker colours, according to its destined use, are lying about in their due receptacles, ready to be passed on to their next stage; and even in its present state, some of these preparations, such as the gingerbread, are quite enjoyable.

Long ranges of machines in another room, with rollers at different distances, and reminding one much of the machinery in the mixing room of a cotton factory, were busy carrying along the prepared dough, and delivering it rolled out thin, very much like a piece of cloth, to the final roller. After passing under this it reappeared with the requisite cut of the intended biscuit, the dough between the cut out biscuit being pulled back in long stringy portions for recasting, and the cut out portions steadily advancing towards wire catching trays, removed in quick succession to the travelling ovens.

Another machine astonished us by its continuous delivery of pretty notched strips of a white sweet looking dough, for various fancy uses. These were received upon boards and cut to the requisite length by an attendant, and passed off with surprising rapidity. At adjoining tables they were being shaped by boys into the numerous forms which they were to assume—here into crowns, there into Prince of Wales' feathers, etc., well known to the consumers of fancy biscuits, who would doubtless eat with no less relish if they had some conception of their mode of manufacture.

Next, of course, they are placed in the ovens. We saw none of what are termed brick-ovens, but mostly, not by any means all, of the description termed "travelling ovens." Whatever can they be? was our enquiry on hearing them first mentioned. Travelling ovens are the hot receptacles into which the biscuits, cakes, etc., are placed at one end, ready for baking, and delivered at the other end, some twenty yards further on, a few minutes afterwards, already cooked. This seems to be effected by means of rollers slowly moved by engine power; and the feeding at the unbaked end and fetching away at the other are briskly carried on.

Baking is not, however, the only process resorted to. For some kinds boiling is necessary. Cracknels, of which some ladies are very fond, are subjected to this; and we saw the large boilers, which require frequent refilling with fresh water, in which this was done, and the vats in which they are afterwards immersed for cooling.

Of course the aid of machinery has been very largely called into use for the different processes of the biscuit factory. For mixing, rolling, cutting out, and we might almost say, weaving some of the cloth-like films that present themselves (and which have a texture of surprising tenacity), and for hoisting, baking, and delivering its finished products, we saw its many adaptations. "Jacob's ladder" was the rather appropriate name given to one of these double hoists for taking up the full baskets and bringing down the empty ones.

There is one side room which we must mention that never fails to arouse the curiosity of lady visitors, and may stir in the minds of some of our readers, longing or happy feelings. It is the bride-cake room. Here are seen those wonderful compositions in all stages of progress, from the naked round-looking cheese-like lumps, to those finished turn-outs which we see just leaving the hands of the presiding artist who superintends their decoration.

But our story must have its close. Last of all we come to the packing-room, and here find every kind of cake and biscuit

produce in all sorts and sizes of packages, tins, boxes, and baskets ready for supply to every part of the United Kingdom, India, the Colonies, and we might also add, the whole civilised world.

Biscuit nomenclature, indeed, is of itself quite a tolerable study; we have biscuits called after persons, of kinds as many as would suffice, we should think, to stock a young shop, for there are Albert, Alberta, Victoria, Leopold, Napoleon, Oliver, Alexandra, Abernethy; not to mention cabin, captain's, queen's, and royal. Then of places, there are Jamaica, Osborne, Presburg, Shrewsbury, Tunbridge, Brighton, Bath, Dover, Britannia, and even Savoy, German, Oriental, American, and African; and either for their ingredients or their uses we have arrow-root, bran, butter, ginger, maizena, pearl, raspberry, charcoal, vanilla, water, wafer, wheaten, spice, soda, filbert, almond, lemon, and walnut biscuits; nor should we omit tourist, traveller's, tea, coffee, dessert, lunch, soirée, diet, nic-nac, and pic-nic biscuits; and the latest novelty that we saw in the making, and had the pleasure of tasting, was that of cocoa-nut biscuits.

Those who feel curious as to this remarkable factory, and would like to pay it a visit, will be, perhaps, hardly prepared to hear that this is not a very easy matter. Though certainly one of the sights of Reading, there are some obvious reasons why it is not readily accessible. That it is not so, however, is certainly not the fault of its generous proprietors, but of those who, having obtained such permission under false pretences, have been found to have done so for objects which were special, and were *not* honourable. But those who come with introductions, wishing to make themselves acquainted with as much of the *modus operandi* as such a visit will afford them the facility of doing, will find themselves amply rewarded, greatly interested, and most courteously conducted over a large portion of the extensive premises which are devoted to this thriving and highly useful business.

R. Bailey Walker.

CONDITION OF THE WORKING CLASSES.

No. 3.—SWEDEN.

BY far the largest portion of the Swedish population is engaged in agriculture, which, generally speaking, is of rather a primitive character, the reason being that the greater part of the soil is the property of peasants who cultivate it themselves, and is necessarily divided into small properties, which seldom enjoy the advantages of capital or any improvement in tillage. To assist the peasant farmer in his cultivation there are about 310,000 hired labourers, paid either in wages or by holdings, and 100,000 "torpare," who hold cottages and small plots of land, for which their families and animals are bound to render so many days' work. The yearly wages for these labourers range from 3*l.* to 8*l.* (with board) for men, and from 30*s.* to 4*l.* for women; but in the northern provinces they are higher. Day wages (without board) are from 7*d.* to 2*s.* 2*d.* for males, and from 4*d.* to 1*s.* 10*d.* for females in the summer months, and about a third less in winter. In the dwellings of these peasant proprietors there is a considerable deal of rough comfort, though not much attention to sanitary arrangements. They are usually two-storied cottages, with a couple of rooms on the ground floor and two gable rooms on the upper floor. One large room below serves for kitchen, dwelling, and sleeping room of the whole family, servants included, the latter object being attained in recesses formed in the walls and on benches round the room. The rooms are therefore warm, but as the windows never open the condition of the atmosphere can be easily imagined. The style of food differs very much, which is not surprising when we remember under what widely separated parallels of latitude Sweden exists. In Skania and the Gothenburg district the farming population lives on potatoes, rye, oats, and barley, with an abundance of salt herrings. Meat is but seldom seen, and when present it takes the form of smoked pork, the farmers being generally large breeders of pigs. Milk, too, is universally abundant, in which respect the Swedish peasant is far more fortunate than his English brother, who finds, even in the most rural districts, that most necessary article becoming scarcer every day. Towards the northern part of the country the variety of the diet is considerably reduced, for as barley is the only thing

grown everything else has to be imported. The dress is usually warm and serviceable, made of homespun linen and woollen material, so that altogether the agricultural population may be said to be in fairly comfortable circumstances. Of skilled labour, the most important class in Sweden is that which is occupied in the mines and ironworks. It may be mentioned that a large proportion of Swedish ore comes to England and is in much request at Sheffield for steel making, for which it is peculiarly fitted. It is difficult to compare the rates of wages in the mining districts of Dannemora, as the men are nearly always paid by the piece, but they are nothing like so high as those of English iron miners.

In the ironworks the skilled smiths and smelters earn from 2*s.* 3*d.* to 3*s.* 4*d.* per day of twelve hours, though in those of Arboga they vary from 2*s.* to 2*s.* 4*d.* per day of eleven hours. But then free lodging is given, together with outhouses and cellars, fifty-four cubic feet of wood for firing, and a plot of ground to plant potatoes, in addition to which there are no stoppages for the sick fund; so that on the whole the ironwork men are by no means badly off. As regards the towns, Stockholm and Gothenburg are the great centres of artizan life—the former containing those trades or handicrafts which are usually found in a large capital, and the latter being more of a manufacturing town. Wages in Stockholm average two rix dollars, or 2*s.* 3*d.* per day, but a skilled workman can easily make his 25*s.* a week. Lodgings are plentiful and fairly good. A comfortable room can be hired for 4*s.* 6*d.* a month, subject to the trifling inconvenience of the landlord using it for his sitting-room during the day. Ventilation is here, as in the country, a desideratum, for although double windows are used, owing to the cold, the inner one is always carefully pasted up, and the sole air that obtains access to the room is the current maintained between the door and the stove. There is no drainage whatever in Stockholm, but that very fact makes it as clean and healthy a city as is to be found in Europe, for the dry earth system being in vogue, all the contents are rapidly carried off within three or four hours and converted into manure. The workman lives well and sensibly in the matter of food, at a cost of about 5*s.* 6*d.* a week. It consists of meat (beef and pork) once a day, rye flour baked into hard cakes, vegetables, soup, eggs, and milk. A married man spends about 13*s.* per week on his housekeeping, but it is a common practice for the unmarried to take a portion of their wages out in board, and get a good breakfast (of coffee and bread and butter), dinner, and supper. How much better is this than, as many of our English workmen do, to take a deceptive dram in the morning, a

process which they frequently go through at every meal, to the exclusion of more nourishing and flesh-forming food. The national drink is now beer, although it used to be spirits, and the Swedish nation may be congratulated as having become one of the most sober people instead of the most drunken. This happy change arises partly from the fact that brandies have become much dearer since an excise duty of 1*s.* 4*d.* per gallon was levied, and in addition to this check, a tax was imposed on the retail trade, and a Permissive Bill was passed, by which any parish or town can prohibit the licensing of brandy shops or restrict their number. In the manufacturing district of Gothenburg, a society has been formed for promoting sobriety, and one of their modes of action is to farm the brandy licenses. The result of this has been that new drinking shops, pure and simple, are seldom opened, and most of the old ones are turned into eating houses. Moreover, no brandy is sold on credit, or to any persons who are not of adult age, while strict laws punish those who allow drinkers to become intoxicated. Whatever may be the advisability of a Permissive Bill, the methods here adopted to check drunkenness are very successful, and might be imitated in our future legislation. The profits arising from these shops are handed over to the municipal authorities, and are spent in diminishing the municipal taxation, sometimes to the amount of 10,000*l.* a year. In Gothenburg, which abounds in engineering works, cotton factories, and printing establishments, the men are generally paid by the week, pay day being on Friday instead of Saturday, an arrangement which proved a good check upon Sunday drinking. Skilled workmen get at the rate of 2*s.* 9*d.* to 3*s.* 4*d.* per day; ordinary workmen from 1*s.* 8*d.* to 2*s.* 3*d.*; boys from 10*d.* to 1*s.* 4*d.* Gothenburg has initiated a great change in the workmen's dwellings, which were formerly very bad and over crowded, by building model lodging houses, the rooms of which have more than 3,000 cubic feet of air. The rent is moderate, and the rules as regards cleanliness and good behaviour are very stringent. The educational standard too is much higher than it is with us, the town of Gothenburg, which has only a population of 55,000, maintaining 120 primary schools, where 4,500 children receive gratuitous (though compulsory) education, at a cost of about 1*l.* 6*s.* per annum for each child. The principal food of the working classes consists of rye bread, baked in thin, hard cakes; potatoes, porridge of oats or barleymeal, cabbages and turnips, and fresh fish in great quantities. Haddock, flounder, mackerel, and cod form an important item in the diet tables of the district, for the Gothenburg people have more sense than our coast

dwellers, who have no idea of regarding the sea as a portion of their larder. Tea is but seldom seen, but coffee is largely drunk. The following is a price list of the provisions in most general use:—Rye meal, per lb., $\frac{3}{4}d$; oatmeal or grits, per lb., $1d.$; milk, per gallon, $7d.$ or $7\frac{1}{2}d.$; cheese, coarse quality, per lb., $3\frac{1}{2}d.$; pork and bacon, per lb., $4\frac{1}{2}d.$; beef or mutton (fresh), per lb., $3\frac{1}{2}d.$; potatoes, per ton, $45s.$; salt herrings, per barrel of 500, $24s.$ An average labourer, getting $2l.$ $10s.$ per month, will spend about $10s.$ for rent, $30s.$ for food, and $10s.$ in clothes and extras. The item of clothes is rather a heavy one. The climate requires the workmen to be clad warmly, and formerly coarse linen and woollen stuffs were used, which lasted well and fulfilled their duty. Cottons have now largely superseded these, and the consequence is that they wear out much faster, and give rise to a number of diseases of which anœmia is the prevailing feature. A few words as to the character of the Swedish workman. As regards his skill and ingenuity there can be no question, particularly in the matters of machinery and joinery; some of this is familiar to English eyes, for Gothenburg has frequently sent over to the various exhibitions specimens of housefittings remarkable for their good work and cheapness. Otherwise the Swede is rather dilatory, with a small appreciation of the virtues of punctuality, and does not always appear to take that interest in his work which he should do.

Phillips Bevan, F.R.G.S.

Herrings and Marriages.—The connection between herrings and marriages may not be obvious to all, but the Scottish registers make it clear enough. In the returns for the third quarter of the present year the Registrar of Fraserburgh states that the herring fishery was very successful, and the value of the catch, including casks and curing, may be set down at 130,000*l.* sterling, while the marriages were 80 per cent. above the average. On the other hand, the Registrar of Tarbat has to report a steady falling off in the fishing at that creek, and consequently the quarter passed without an entry in the marriage register. The Registrar of Lochgilphead also returns that the herring fishery has been a failure in the loch, and states that this accounts for the blank in the marriage column this quarter. One registrar, in his return for the quarter, reports marriages in his district, "like angels' visits, few and far between;" at the fishing villages it may be put more briefly—no herring, no wedding.—*Times.*

HUNGARIAN WINES.

Hungary has within the last few years risen from her ashes, and become since the solemn ceremony of the coronation of the Emperor as King at Pesth, an important member of the strangely heterogenous mixture of nationalities which unite to form the Empire of Austria. Not the least important industry in the new Magyar kingdom is doubtless that of wine production, and if the blessings of external peace and internal goodwill be but continued, her wines will soon take rank with the most popular produce of France. We have had our attention specially called to the Hungarian vintages by an association styled the United Wine Growers of Hungary, who are setting themselves to popularise their wines in this country, and who have (through their agents, Messrs. Findlater, Mackie, Todd & Co.), forwarded to us for inspection and analysis a large case of samples. As a general result of our investigations, we may state that these wines, while possessing the character of Clarets and Sauternes, have more fulness of body, and a larger per-centage of alcohol. The acidity, although present, is not as a rule so pronounced, and we think that many of them will suit British palates all the better from these qualities. Probably the most satisfactory way of giving our readers an idea of the nature of the various classes examined, will be to take them in detail according to price.

1. *Nészmelyer*, 24*s*. per doz.—A wine containing ·435 per cent. of fixed acid, and agreeable as a light summer drink, resembling good French white wine.

2. *Œdenburger*, 30*s*. per doz.—A really excellent white dinner wine, containing a very considerable per-centage of alcohol, and having a peculiarly agreeable flavour, somewhat resembling that of the Muscat grape. This brand will probably become the most popular of all.

3. *Ruster*, 38*s*. per doz.—A full-bodied, and yet dry, white wine, containing 17 per cent. of alcohol, and well suited for after-dinner purposes. It contains ·45 per cent. of fixed acids, and only a very small trace of volatile acids, and is in every respect a sound, excellent, and invigorating beverage.

4. *Karlowitzer*, 20*s*. per doz.—A red wine with good body, fine colour, and a most agreeable astringency.

5. *Voslauer*, 28*s*. per doz.—A full and rich red wine, possessing very little volatile acidity and a large proportion of alcohol. This brand bids fair to be a favourite red wine with the English public.

6. *Karlowitzer*, special growth, 36*s*. per doz.—A really splendid wine, containing 17 per cent. of alcohol and a large quantity of extractive, rich in astringency. The ash contains an unusual percentage of phosphoric acid, and we should fancy that this brand will be popular with medical men.

7 and 8 are the *Œdenburger* and *Karlowitzer*, manufactured as sparkling wines, and we can only say that we should prefer them to any champagne, at even a higher price. The deliciously quaint flavour of the former comes out to perfection, and a more agreeable sparkling wine we never tasted, except perhaps *Perrier Jouet*, which, however, is nearly double the price.

In conclusion, the results showed us that these wines were the genuine juice of the grape, and we cordially welcome their appearance as most valuable additions to the dinner tables of those who wish to combine economy with excellence.

J. Muter, Ph.D.

The Price of Vegetables.—Some little idea may be formed of the necessity of a reform in our green-grocery arrangements by the following passage, which occurs in the report of Mr. H. J. Morgan, on the cultivation by means of sewage irrigation of the Lodge Farm, Barking, for the year ending August 31 last, which has just been published. "The average price," says Mr. Morgan, "which our best potatoes last year realised was from 6*l*. to 7*l*. per ton. This year we have obtained no more than 2*l*. to 2*l*. 10*s*. Onions, which sold last year for 43*l*. per acre in the ground, and realised a great deal more by marketing, have this year been sold by us at 28*l*., the highest price I have heard of being 30*l*. per acre. In the autumn of last year cut cabbages (Collard's) fetched from 1*s*. to 1*s*. 3*d*. per dozen, while this year there has been a difficulty to obtain 3*d*. and 4*d*. per dozen, some having even been sold, I hear, as low as 6*d*. for five dozen. Scarlet-runners, which made 8*s*., 10*s*. and 11*s*. a sieve last year, only reached 3*d*. and 6*d*. and 1*s*., until lately, when they have made 2*s*. and 2*s*. 6*d*. a sieve. Bunching greens have not paid us to market, and we have hitherto fed cattle on them. I have been told by several farmers that they have ploughed in their crops, as it would pay them better to use them as manure than to market them. These differences in price have not at all arisen from differences in quality, as our produce has been, in most cases, as fine and as abundant this year as last. Strange to say," adds Mr. Morgan, with refeshing *naïveté*, "that in the face of all this the retail prices are as high as ever, a cut cabbage ordinarily costing 1½*d*., and a small dish of beans 4*d*. and 6*d*., with everything else in proportion." It is more melancholy than strange. We have heard such things before, and at the same time we have heard that there are thousands of poor persons who, while vegetables are either used as manure or are almost given away by the grower, are well nigh starved for want of a dinner, being unable to pay the exorbitant prices demanded by the retailer.—*Pall Mall Gazette.*

THE TRANSPORT OF CATTLE BY RAILWAYS AND THE MILK SUPPLIES OF TOWNS.

In the *Food Journal* for March and April, 1871, the subject of the transport of cattle by railway was treated, and the extreme cruelty inflicted upon animals by the present ordinary mode of transport was made manifest. The facility by which it might be obviated was shown, by the use of trucks in which food and water could be supplied on the railway, so that animals might be kept in good condition even during the time of their transport from Sutherlandshire to Dorsetshire. It was also shown that, owing to the present faulty system of railway transport, which provides neither for the supply of food nor of water during the journey,—although it should be forty, fifty, or even (as in some extreme cases) eighty hours in length,—cattle reach their destination grievously exhausted and in a highly feverish state; and a statement was made of the number of oxen, sheep, etc., condemned in the Edinburgh market in a year, from which the greatness of the loss over the whole country may be inferred.

But apart from all question of the number of animals, or of the quantity of beef, mutton, or pork condemned by market inspectors, it is to be observed that the cattle which arrive by railway are generally fed for a number of days on good pasture, that they may recover from the fatigue of their journey, and be again in a fit state for appearing in the market, or being conveyed to the slaughter-house. The economic importance of this has hitherto been little considered. The cattle brought to London from our home-grazing districts and from abroad, amounting to about 600,000 oxen this year, require, on an average, at least four days' keeping in order to recover from the injury sustained in transport; and this cannot be estimated at less than ten shillings a head, including the expense of driving from the train to the field, and thence again to the market, or, for the number of oxen consumed in London alone, nearly 300,000*l.* sterling. This is a great expense, which the public must bear in the increased price of meat. It is also the common practice of the London butchers, and those of other great towns, to keep cattle, after transport by railway, for five or six days before they are slaughtered, feeding them with

good hay, which is requisite in consequence of the feverish state produced by their sufferings during their protracted journey; and it is easy to see that the price of meat must thus be very considerably increased.

There is still another way in which this matter affects the interests of the public. We are greatly at a loss for a supply of good and cheap milk for our great towns, and especially to meet the wants of the multitudes of children which they contain. The difficulty of obtaining this would be at once removed, or at least greatly diminished, if the pasture fields around the towns were devoted to the feeding of milch cows, as they would certainly be, were it not that they are required by cattle dealers and butchers, for the pasture of the animals which need thus to be restored to good condition after their railway journey. In the vicinity of every large town, almost all the finest fields are thus occupied; whilst the dairy cows of the towns are in great part fed on *draff* and *dreg*, which, although not hurtful if given in proper proportion to the natural food of the animals—grass or hay—are injurious to their health if exclusively or very largely used. The cattle of many town dairies are entirely confined to their byres, and whatever may be the food with which they are supplied, cannot be expected to be as healthy or to yield such good milk as those which enjoy rich field pasture, with the free pure air, and the light of heaven. All this would be remedied if an improved method of cattle transport were adopted on our railways, so that the cattle should continually receive supplies of food and water. Cattle dealers would no longer need the fields for which at present they pay great rents, and these would be devoted to their proper use, in affording pasture to dairy cows, so that milk would be more abundant, and of better quality.

It may be mentioned, in conclusion, that the Austrian Government has adopted a cattle truck, suited for feeding and watering during transport; it is, in fact, Mr. Reid's truck, mentioned in our former article already referred to, with slight modifications, and its employment is enforced on all the railways of the empire. We are glad to be informed that, after many experiments, made with all possible care, the Austrian authorities have been so thoroughly convinced of the value of Mr. Reid's invention, that they have offered him a large sum of money for his patent—a reward which he well deserves for his indefatigable labours in this cause. It would have been more satisfactory, indeed, if a proper appreciation of the importance of the object, which he has shown us how to attain, had been first displayed by our own Government. It seems strange that an invention, originally British, and urged upon

public attention in Britain without effect, notwithstanding full proof of its adaptation to its purpose, the importance of which is unquestionable, should thus be taken up and applied to general use in another country. There is little reason to hope that our railway companies will be induced to take a single step towards this much needed improvement, until they are compelled to do so, which can only be through the force of public opinion and legislative enactment. We are glad to see that this subject has recently been taken up in a manner suitable to its importance by that influential body, the Highland and Agricultural Society of Scotland, the oldest and one of the most powerful and active of our British agricultural associations. At a meeting held on the 6th December, 1871, the directors of that society resolved that a new order of council is urgently called for, under authority of the recent Act of Parliament (1869), in which "it is specially provided, that animals should be supplied with water when trucked and untrucked, *and during the journey both with food and water;*" and that "it is absolutely necessary to provide covered waggons, closed at the ends, and 18 in. along the sides from each end, with an arrangement of troughs for the proper supply of the animals with water, and racks for supplying hay in the trucks during the journey." These recommendations they further resolved to urge upon the attention of the Privy Council, and, if necessary, by an influential deputation. From this movement, which, we trust, will be warmly supported by other agricultural associations, town councils, and public bodies interested in the matter, the best results may be expected. Meanwhile, we have observed with great satisfaction, that the law was enforced a few weeks since, by the infliction of a fine upon an English railway company, on a prosecution at the instance of a humane gentleman, for not supplying water to cattle during a long journey. If the law were thus generally enforced, all needful improvement of railway trucks would soon be effected. We commend the subject to the attention of our Societies for the Prevention of Cruelty to Animals.

JOHN MONTGOMERY.

DOMESTIC ECONOMY IN POMPEII.

Taken in the literal meaning of the word, the description I shall give of food, and cookery, etc., in Pompeii, can hardly be styled "economy." It will rather come under the head of luxury, but I mean it to imply the domestic arrangements of Pompeian life, more or less graduated, from the palace to the small tradesman's dwelling.

In the principal palaces there were four dining-rooms *(triclinia)*, for spring, summer, autumn, and winter use. The latter was made to face "the winter west," to secure light and heat for the afternoon repast. The spring and autumn *triclinia* looked to the east for a temperate atmosphere, and the summer room to the north for as cool an atmosphere as possible. All the good rooms were on the ground floor, the upper stories being occupied by slaves, and the lower branches of the family, with the exception of a terrace on the very top *(solarium)* ornamented with flowers and shrubs, trellises and fountains, amongst which, on grand occasions, the evening meal was discussed. In some *triclinia* there were different sorts of tables, each having its own service and particular attendants. The *triclinium* proper was twice as long as it was broad, and had a large table encompassed by three couches at the upper end, leaving the fourth and lower end open for the servants; the name is, in fact, derived from that circumstance. Occasionally the ceiling was so contrived as to open, and a second course was lowered down with showers of flowers and perfumed waters; and rope-dancers *(funambuli)* performed feats over the assembled company's heads, a fashion, which must have given them the same uncomfortable feeling, as the suspended sword of Damocles did to other feasters. At the upper end the walls were ornamented with beautiful hangings, and at the lower end with garlands of flowers and festoons of ivy, paintings of young fauns, half-naked bacchantes, vases and festive symbols. At the top was a frieze divided into twelve compartments each surmounted by a sign of the Zodiac, and paintings of the articles of food in season each month. From these we learn that the Pompeians appreciated shrimps, shell fish, sea fish, lobsters, wild boar, game, and all kinds of the same food that we eat with so much relish. Bronze lamps, hung from chains of the same, or

raised on handsomely wrought candelabra, threw a brilliant light on the table, which itself, in palaces, was made of richly veined wood, and rested on ivory feet. It was often covered with a thick plate of silver. The couches were made of bronze, ornamented with silver and gold, and purple mattresses were laid upon them with silk embroidered cushions whereon the guests rested their lazy persons. From thirty to sixty people might thus be entertained. Saw-dust was strewed over the mosaic pavements, dyed with saffron or vermilion mixed with a powder made from talc. Of course, in less wealthy families, the scale of magnificence was not so great, but the arrangements were on the same principle.

There were also other banqueting saloons, called *cygicene*, ornamented with columns, and facing gardens into which they opened with folding doors. Their length and width was such that two tables with couches facing each other were placed in them, leaving room for the attendants to pass round. The Pantheon in Pompeii was a place of public feasting, and was supposed to be under the protection of a Deity, who patronised the banquet. It was like a Trattoria or coffee-house, and was close to the Forum, so that business and pleasure might be combined if desired. A street ran along the north side of the Pantheon, called the street of dried fruits, filled with shops containing dainties of all sorts, more especially raisins, figs, plums, chesnuts, preserved fruit in glasses, and lentils. On the walls of the Pantheon were paintings of Cupids making bread, and a mill with an ass on each side, that animal probably being used to grind corn. There were also paintings of meat hatchets, boars' heads, fish, domestic fowls of all sorts, game ready for cooking, a cornucopia with *amphoræ* for wine, a sort of table napkin, and other accessories to a feast. In the centre of the court of the Pantheon was a kind of sink, into which refuse from the plates and dishes was thrown. The kitchens in Pompeii were never built underground, except on the side next the sea, where the declivity was so great that it was necessary to do so, in order to bring the ground floor to a level. It is a pity that we, in these modern days, are so given to underground kitchens, for it is often a source of misery to our servants.

Wine was carried about in *amphoræ*, or large earthen vessels. It was brought to the house by carts in skins, and drawn off into those vessels. Water, brought into the city by aqueducts or water-courses, was taken round to the different quarters by conduits made of lead or baked earthen pipes, and it is said that the letting out of the public waters to private persons was a great source of revenue. To prevent fraud there was a brass measure fixed in the reservoir which

regulated the quantity of water passed through it. The right to a supply of water was personal, so that it was cut off on change of ownership of a house, and if the next comer could not afford to purchase a private pipe, he was obliged to fetch water from the public fountains. Each house contained a cistern for rain water, which came into it from a canal, and from which it was drawn for the household use through a well hole. These cisterns were lined with a strong cement, and if people were particular about pure water, they made two or three cisterns at different levels, so that the water might deposit its impurities in each. It appears that the Pompeians boiled the rain water when for drinking, but it was not much liked, and believed to make the voice hoarse.

All kinds and shapes of ornamental glasses and bottles have been found in Pompeii, which of late we have been sensible enough to copy, and thus supersede the heavy inelegant cut glass of our ancestors. The Pompeians usually drank their wine mingled with snow, clarified through a strainer, and a curious and ingenious vessel for making warm decoctions was discovered in Pompeii similar to a modern urn, only more complicated in its interior. A bronze pastry mould was found with a design on it somewhat after the fashion of our butter moulds, a flat ladle pierced with holes, apparently meant for straining the water from vegetables, etc. There were knives, very like ours, strainers, and pans, with four spherical cavities, as if meant for cooking eggs. One was found with twenty-nine egg-holes, circular, 15 inches in diameter, and with no handle. There were ladles of every shape and size, frying pans, and cooking pots of bronze, with handles like our fish kettles, to be attached to a chain over a brazier or fire. And, by the way, the braziers used in Pompeii were of particularly useful form, with places for boiling water, and for saucepans, in addition to the middle portion, full of fuel. Tripods seem to have abounded, and stoves with holes for separate pots, similar to the charcoal stoves in use at the present day.

In the bakery line the mills, ovens, kneading troughs, and vessels for containing flour, etc., have been discovered, and each baker appears to have ground his own flour. Some flat loaves, about 8 in. in diameter, were found entire, with the moulds in which they were supposed to be baked. From a painting in the Pantheon it would appear that fanciful shapes were employed for loaves similar to what we call "fancy bread." Mills and ovens were of comparatively later date, and for a long time the grain was bruised in mortars, and bread was baked under the ashes, or in a bread pan. Bronze beehives were found resembling modern ones in shape.

The Pompeian dinners usually comprised three courses. The first consisted of eggs, olives, oysters, salad, pickles, etc.; the second of made dishes, fish, and roasts; the third of pastry, confectionery, and fruits. From a painting discovered at Pompeii we have the representation of a large feast in those days. An immense dish containing four peacocks stood in the centre of the table, surrounded by lobsters, one holding a blue egg in its claws, another a stuffed rat, another an oyster, and the fourth a basketful of grasshoppers. At the bottom of the table were four dishes of fish, and above them partridges, hares, and squirrels, each holding its head between its paws. This was all encircled by a sort of German sausage, apparently; and then came a row of yolks of eggs; a row of peaches, melons, and cherries; and lastly, a row of vegetables of different sorts. What does not seem to be a pleasant addition was a kind of greenish sauce spread over most of the eatables. In a painting found on the walls of a kitchen there was a representation of the worship offered to the Lares, and all the food and cooking utensils were placed under their protection. Different kinds of eatables are here seen—a bundle of small birds, a string of fish, cakes, eels spitted on a wire, and a joint of meat resembling a loin of pork suspended by a reed. Vases with olives still swimming in oil were found, and it is said that the fruit retained its flavour, and that the oil burnt well, which seems extraordinary after so many years' burial. Pompeii was furthermore celebrated for the manufacture of a fish pickle called *garum*, an article of the highest importance in the kitchen. It was made from the entrails of a fish called scomber (which is supposed to be mackerel), macerated in brine. An inferior kind could be made from the anchovy, and was called *alec*, which was really the name of the dregs of garum. Pliny says—"No liquid except unguents fetched a higher price."

A cook's shop was discovered, and a thermopolium—a shop for the sale of hot drinks—identified by the stains seen on the counters, and supposed to be the marks left by wet glasses.

Milk shops have also been identified by the sign of a goat being milked placed over the door. We learn by all these discoveries that so-called modern inventions are often only improvements upon older beginnings, and that the minds of these old Pompeians were as fertile as our own.

ALICE B. LE GEYT.

SOME ERRORS RESPECTING DIET.

Too precise rules as to diet, except in special cases, are of very questionable service. Generally they are found to be too irksome, and are cast aside or forgotten. Indeed it may be doubted, save in the exceptions referred to, whether they are really conducive to health; in some ways they will be even injurious, by frequently causing the mind to pay too much attention to the details and particulars of the subject, which though of the greatest importance, is not one that should occupy the mind beyond a common sense and justly necessary degree. Cornaro, a very rare exception, it is true, carried this preciseness to its utmost possible limit, but who has ever found success in carrying out his system? His case can never be an example except as to the value of acquiring the power of self-denial respecting those things which experience tells us are not suited to us.

It is, perhaps, not too much to say that his system was full of errors, and contains some truly cardinal ones. He chiefly dwells on the limitation of quantity as being the most important point, but that was really only one of many, the absence of which would have rendered the limited quantity not only of no avail, but positively injurious. With all the advantages by which it was accompanied, with the most nutritious and digestible kind of food, with pure wine for drink, with a genial climate and every advantage that wealth could confer,—yet that there was a fundamental mistake somewhere was shown by the fact that once a year he was reduced almost to the state of dissolution, thus proving a great want of reserved vital force. We think that it is easy to fix upon the cause of the annual sinking into feebleness. It was always before the new wine came in, which immediately revived him. The wine was probably not at that period very securely kept from atmospheric influence, and the result would assuredly be that before the year closed ere the new wine came in, the principal portion, perhaps nearly all of the alcohol in the wine, was changed into acetic acid which is lowering and depressing to the bodily power. Thus there were two causes at work quite sufficient with his limited diet to produce the serious effects that yearly took place; there was the withdrawal of one of the most powerful stimulants, alcohol, and

the introduction instead, of a depressing agent; the upholding influence taken away, and a casting-down one brought into action. Had his diet not been so limited, he would not have been at the mercy of such results from a change in only one of its elements. One case is known to the writer in which Cornaro's plan was adopted in England, even to precisely weighing the exact quantities at each meal, and the result was what might have been expected. It ended in complete failure, and every symptom of the disordered physical state for which it was taken was aggravated.

But though very precise rules are only of exceptional value, and quite impracticable for general use, yet there are broad and general rules and considerations respecting diet with which all might be acquainted, and by which all should be more or less influenced and guided. And, perhaps, one of the ways of attaining clear views on the subject is that of considering some of the errors in usual practice of life. One of the most prevailing mistakes is the living according to custom without any regard to its healthiness or individual suitability. In various districts of the country there are very different modes of living, some of them being moderately good, others very erroneous, yet in each case the inhabitants follow the local custom, good or bad, with almost rigid adherence; so it is also in different sections of society, each of which has some custom, either as to diet or times of taking food, which is allowed to rule with despotic sway. This error is specially marked in certain families and manifests itself in what may be termed a hereditary diet, the same kind of food, and mode of preparing it, continuing from one generation to another. If it happen, for it is a mere chance, to be good and healthy in its nature, well is it for such families; but if it should be faulty and injudicious, the whole race suffer the consequences, for the evil spreads into all its branches; children, brought up to it, naturally adopt and carry it on in their own homes, when they come to have them. And the family custom is blindly followed, in spite of ample warning in the complaints and general ill-health of the family race. Who has not known families apparently calculated to live in as good health, and to as long a time, as others, but of whom not a member is now left? while a proper and wisely adopted diet would lessen the tendency to certain special diseases, and if persevered in, might in a generation or two entirely eradicate such diseases from the family constitution. Another great error that very largely prevails, and it is to be feared—owing to quack, or as they are called, patent medicines—is largely increasing, is the placing too great reliance on the effects of medicines and ignoring the

effects of food. The great majority of people seem to have very little notion of the effects of food upon the health. Indeed, with respect to many, stupidity is not too strong a term to use. Persons who have had disordered health for many years, or a tainted constitution, one specially liable to some disease, will place all their faith on medicine, and never think about the continuous effect produced by their food. Many, indeed, will place the most implicit reliance upon one or two little pellets out of the doctor's round box, or a tablespoonful of mixture out of his bottle, while they never let a thought pass their minds on the effects that must be produced by the four to ten or twelve pounds of liquids and solids which they daily take. Medicine is to do everything, food nothing. Might not the medical faculty do a great amount of good to the general health of the population by paying more attention to the subject of diet? What they say to their patients is regarded with almost religious attention. Yet, too often, medical men will prescribe, and that, too, where the complaint is a constitutional one, and never say a word as to food, or make a single inquiry respecting it. It is not to be wondered at that in such cases the doctor finds the special medicine fail to produce the effect which other medical men find it to do. Homœopathic doctors have given far more attention to this most important subject, and with a corresponding degree of success. Why is it that some physicians and surgeons are so pre-eminently successful? They have only the same medicines to use as others, and it will not be presumed that their knowledge and intellectual powers are so far above their compeers as to produce such different results. It is because, like successful commanders of armies, they know the value of every detail and take distinct cognisance of them all, and among them they take that notice of diet which its importance requires. No doubt some special medicine has at times fallen into undeserved disrepute through the question of diet being neglected, and this error of omission has in those cases neutralised completely its effects. It is a well-known fact that young practitioners place great faith in medicine, while the more experienced place more reliance upon assisting nature by the proper ordering of the lives of their patients. So important is due medical attention to diet, that too great prominence and fulness cannot be given to any notice of it.

Another great and very prevalent error is the popular fallacy that to pay attention to the kind of food taken will lead to leaving off first one thing and then another till the stomach refuses nearly everything. The fact is that such attention, so far from consisting

in leaving off, consists in adding to the range of substances taken. No doubt persons may begin to leave off first one thing and then another, till an enfeebled, ill-nourished, and contracted stomach begins to refuse everything; and the denial of the things needful for the healthy exercise of its functions has led to a more or less complete loss of power, if not to positive disease. But this mistaken and most injurious kind of attention to diet has no more to do with a wise and due regard to it than a man drowning himself has to do with a wise and healthy use of proper bathing. The last error that we shall at present notice, is the very limited number of articles of which the entire diet of many consists, and those, too, generally of the same kind. Great numbers—it may be said the vast majority—live from year's end to year's end on one almost unvarying kind of food, any variation that there may be, being so incidental and slight as to have no real influence in modifying the sameness of the food habitually used. This is one of the most injurious errors of all, and leads to a deteriorated constitution, enfeebled health, and a break-up of the body many years before its natural time. It is the cause of entire districts, and even nations, where the mass of the people so live, becoming stunted in stature, weakened in strength, and decayed in their general physical powers.

The physical well-being, and—always inseparably connected with it—the prosperity and social state of the individual, the family and the nation, are ever based on, and bound up with, a wisely-ordered, sufficiently varied, healthy, and abundant supply of food.

E. Y. Naylor.

Fish Traffic on the Great Eastern Railway.—The quantity of fish traffic passing over the Great Eastern Railway has been enormous of late. The number of packages of herrings despatched from Lowestoft in the week ending October 8th was 17,689; in the week ending October 15th, 36,746; and in the week ending October 22nd, 37,721. In the corresponding weeks of 1870 the number of packages despatched was as annexed:—October 8th, 8,770; October 15th, 25,792; and October 22nd, 25,902. The amount of revenue derived from the conveyance of herrings from Lowestoft in the week ending October 8th was 1,174*l.*, against 339*l.* in the corresponding week of 1870; in the week ending October 15th, 2,668*l.*, against 1,884*l.* in the corresponding week of 1870; and in the week ending October 22nd, 3,503*l.*, against 1,676*l.* in the corresponding week of 1870. About one-third of the fish despatched appears to have been forwarded to London, the remainder going to other parts of the Kingdom. Similar returns with respect to the quantity of fish despatched from Great Yarmouth are not immediately available, but there is little doubt that the movement of fish from Great Yarmouth has been even greater than that from Lowestoft. The herring traffic has thus produced the Great Eastern during the month of October a revenue of 5,000*l.* or 6,000*l.* per week.

THE SANITARY CONDITION OF THE "BLACK COUNTRY."

Part II.

Wolverhampton.—This ancient town stands upon the western verge of that irregular triangle of country in South Staffordshire which is geologically marked by the presence of the coal measures at the surface. On the south and east of Wolverhampton the prospect offers a dreary succession of mines and ironworks, while to the north and west stretches a wide extent of rich and fertile land. The area of the township of Wolverhampton is 3,200 acres; that of the parish 14,070. The parish of Wolverhampton contains, besides the municipal borough of that name, the townships of Bilston, Wednesfield, Willenhall, and several places of minor importance. The population of the municipal borough of Wolverhampton (the Parliamentary borough is much larger) amounts to 68,237 (census 1871). The increase of the population in the decade 1861-71, has been 7,377, or a little over 12·104 per cent.

Like other towns in the Black Country, Wolverhampton is in a disgraceful sanitary, or rather insanitary, state. In August of the present year a sanitary committee, of which Mr. James Langman is chairman, made a complete inspection of the town, with the following results :—

"Having fully considered the returns submitted by the gentlemen thus engaged in the sanitary inspection of the town, your committee regret that they have to report that they find a remarkable concurrence of testimony to the fact that nuisances of dangerous character are almost universally prevalent, and that the town is in a fearfully insanitary condition."

The report goes on to specify, in detail, some of the most flagrant nuisances existing in the town. Speaking of the closet accommodation, the committee say :—

"The closets are, in all directions, in an utterly neglected state—filthy; some never, others rarely, lime-whitened, frequently dilapidated, with broken doors, shattered seats, demolished floors."

In connection with these wretched hovels are the usual middensteads, which are at least in an equally filthy condition. In fact many of the particulars given by the committee are too disgusting

for quotation. The committee speak of the most horrible stenches in confined yards, closed on every side by dwellings in which live hundreds of women and children, who breathe none other than this poisonous atmosphere. Attention is also called to the dangerous accumulations of foul garbage and house refuse, which, on account of the prevalent neglect, are allowed to reach dangerous proportions in quantity, and a noxious state of decomposition. These horrible pits of filth are not water-tight, neither are they drained by any regular communications with the sewers. The natural results follow. In each midden there is always a considerable quantity of fluid matter, of a most offensive kind, which gradually percolates through the sides and bottom of the pit, and finds its way into the nearest well, to become part of the drinking water of the Wolverhampton people. A particularly offensive and even dangerous feature of many premises in Wolverhampton, is this: there is often no way of emptying the middens and closets, *but by carrying the contents through the dwelling itself.*

In many premises the cesspits are situated under workshops, and even under sleeping-rooms—very frequently without the intervention of a ceiling.

One of the commonest forms of nuisance in such towns as Wolverhampton arises from pigsties; and there is always much opposition offered to any attempt to abate the injury. Many complaints are made of pigsties in this town. One gentleman who reports on one ward only, says:—

"'Almost every pigsty (and there are hundreds of them in the ward) is drained into its own cesspool, a hole dug near each sty, having no connection with any system of sewerage.' Incidental to the pigs may be mentioned accumulations of wash, large tubs of which are kept in many places for sale, which smell most offensively."

Wolverhampton is partly supplied with water by the South Staffordshire Waterworks Company, and, in so far as such supply goes, there is no cause for anxiety as to the wholesomeness of the water, though there are complaints of turbidity. Very many of the population, however, drink the water from the surface wells of the town. Many of these wells are dug quite close to the foulest of cesspits, and none are very far off the means of contamination. Consequently the well water of the town is eminently impure, and the cause of a great amount of preventable disease of the zymotic type. There is less excuse for Wolverhampton than for many other towns in the Black Country in the matter of defective water supply. Small towns, lying in the heart of the district, and oppressed with poverty, can hardly find means to obtain a good and plentiful

supply. The numerous coal pits drain almost the whole district of water; and of course befoul all that is so drawn into them. It is thus necessary to search for the needful quantity in the rural district surrounding the scarified and blasted Black Country. This necessarily adds to the difficulty and expense, and comes very heavily upon the poorer districts. In the case of Wolverhampton, however, all the facts are the other way. In the first place, it lies upon the verge of the desolate region, and closely contiguous to a fine rural district; and secondly, it is not a poor town. Until the supply furnished by the South Staffordshire Company is largely increased, it will be impossible to adopt any measures to prevent the population from consuming the present deleterious well water.

In Wolverhampton there are vast numbers of unpaved yards and courts which are covered with the most offensive filth, which putrifies and emits the most abominable stench.

After giving in detail particulars of the special causes of nuisance and disease already noticed, the Sanitary Committee say:—

"Numerous other insanitary abominations are described in the reports submitted to your committee, but an enumeration of them would fill a volume."

This is certainly not an encouraging picture of Wolverhampton as a place of residence, and it may be safely said of the Black Country, that no person free to choose his place of residence would settle there. Doubtless there are many brought up on the spot, and inured to all its dreary associations, who, when they have become masters of the means of quitting the locality, still remain. Nevertheless it seems impossible to imagine anyone from a more favoured region going there to live, unless under compulsion, or very strong inducements.

The conclusions arrived at by the committee, from the facts collected during their researches, lead to the conviction that there is absolutely no sanitary inspection whatever worthy of the name. They say that it is of urgent necessity for the preservation of public health that "a prompt, regular, and systematic inspection" of all the yards, courts, middens, etc., should be made, and proper reports furnished continuously, so that efficient action may be taken. The committee state it as their deliberate opinion that all the local circumstances favourable to the propagation of cholera, typhoid fever, and other similar types of disease, exist in frightful profusion in all parts of the town. It seems to be impossible to carry out the reforms which are absolutely needed without competent help from a duly qualified adviser. The committee therefore very wisely advise the immediate appointment of a medical officer of health at an adequate salary; saying truly, that any other

course would only be palliative, and that shortly things would revert to their present disgraceful state.

Some years back, Wolverhampton was threatened with a visitation of cholera, and the terror then caused led to the *temporary* appointment of a medical officer of health. So soon as the immediate panic subsided, the Town Council dispensed with the services of this officer, and all the good which he had done was of course soon undone. To this dismissal of an indispensable official the committee very justly attribute the present insanitary condition of the town. It will be well if the Town Council of Wolverhampton fully weigh the gravity of the remarks offered by their Sanitary Committee on the sad extent to which wholly preventible diseases, arising from foul smells and contaminated water, weaken the vital force of the population, unfitting them for their daily work, rendering them peculiarly liable to epidemics, and generally demoralising and pauperising the community. Hence, even on the score of economy, a proper health officer is desirable; how much more so on the higher grounds of morality and religion it is easy to judge.

A system of sewage irrigation, in connection with a new set of sewers, is being carried out. The corporate authorities have furnished the following particulars of this important undertaking.

The new system of sewers will embrace the whole of the town, and will require a term of two years for its completion. It is ultimately intended to irrigate by gravitation an area of about 1,000 acres of land lying to the north-west of the town. The whole of this land lies within a maximum distance of three miles from the centre of the town. The corporation have bought 283 acres to commence with, and they are already using a portion of the sewage. Negotiations are also on foot for additional land to extend the irrigation. The district contributing the sewage has a present population of upwards of 68,000 people. No precise information is forthcoming as to the number of water-closets in the town, but they are supposed not to exceed 500. None of the cesspools are allowed to be put in communication with the new sewers, but it is believed that some few have connections with the old sewers and drains. The average dry weather flow of the sewage is given as about 2,500,000 gallons per day, which is 36·6 gallons per head per day; a proportion much less than obtains at Birmingham, where the discharge at the sewage outfall is about 50 gallons per head. It is very probable that the sewage at Wolverhampton is much stronger than that at Birmingham, but as there are no obtainable analyses of the former it is impossible to speak with certainty.

Up to the present time no great progress in irrigation has been made, as there are only 50 acres under treatment with the sewage.

The land taken for irrigation consists of loamy soil and sand, and partly of peat and light soil. Its inclination varies from 1 in 20 to 1 in 100. At present the sewage farm contains 283 acres, obtained at a cost of about 106*l.* per acre, and the whole is let for seven years at a rent of 750*l.* per annum, subject to an increased rent for such portions as may be benefited by the sewage. The cost of preparing the land for irrigation is given at 10*l.* per acre, exclusive of 1,450*l.* for a conduit to convey the sewage from the town to the land. Open carriers and catch-water drains are used for the distribution of the sewage, with the exception that a portion of the main carrier, near the farmhouse, is covered. About five acres are under irrigation each day. Rye-grass, of which three cuttings a-year are at present obtained, covers twenty-eight acres. It does not appear that any nuisance is created by the irrigation, as the only complaint made arose through some raw sewage finding its way into a tributary of the river Penk through carelessness; and it is expressly stated that the health of the district around the farm is not injured in any way. It is what we might expect, because sewage is not really dangerous to health until it has putrefied. This putrefaction does not, of course, take place where the sewage runs away quickly on to suitable land in such moderate doses as the land can absorb speedily. That the land at Wolverhampton is not overdosed is sufficiently evident by reason of the satisfactory state of the effluent water. A ready market is found in the district for the rye-grass, and no complaints have been made of any ill effects accruing to the animals fed upon it; and it is particularly worthy of note that sheep and cattle have been fed on a portion of old grass land, which had been irrigated, without any injury, either from entozoa or other causes. None of the land here shows any sign of deterioration from over irrigation; in fact, it is considered that there is a decided improvement in its quality where the sewage has been used.

During the severe frost of last winter the process of irrigation went on uninterruptedly, no doubt mainly through the heat always present in sewage and other similar refuse. The sewage has always been found sufficient for all manurial purposes, without any use of supplemental manures.

It is impossible to over-estimate the importance of such undertakings as this sewage farm, and the far larger scheme about to be commenced by the town of Birmingham.

No argument is necessary to show that our towns can never be

free from zymotic diseases until the sewage is satisfactorily disposed of, and all the present domestic wells closed: these measures being supplemented by a radical change in the closet and ash-pit accommodation. As the town council of Birmingham are, amongst other improvements, about to introduce an improved system of closet and ash-pit, it is most likely that Wolverhampton will speedily follow the example of its populous neighbour.

Wolverhampton, like too many other of the Black Country towns and villages, is now reaping the dire effects of the long and gross neglect which has culminated in its present disgraceful state. The town is scourged by an epidemic of small-pox to such an extent that the death-rate—which normally is not high—has risen to a really appalling proportion, namely, 62 per thousand. Under the pressure of this warning, backed by the disclosure of the Sanitary Committee's Report, the Town Council have just appointed a medical officer of health. This is, after all, something like locking the door when the steed is stolen; and, incredible as it may seem, the appointment is not permanent, but for six months only. Does not this look suspiciously like the action pursued in Wolverhampton and other places in South Staffordshire some few years back, when, under terror of a visitation of epidemic disease, health officers were temporarily appointed, and dismissed as soon as the panic subsided? *Absit omen!*

It would not be just to close this article without bearing emphatic testimony to the honesty and courage displayed by the members of the Sanitary Committee, who have fearlessly laid bare the plague spots of the town. To face the opposition and annoyance which the conscientious discharge of such duties entails requires no small amount of public spirit.

J. Beverley Fenby, C.E.

[to be continued.]

SOUP.

By an unfortunate *contretemps* a paper on soup appeared prematurely in the *Food Journal;* but it is a matter which will bear further discussion. We will start with the assumption that the class of food which I am about to consider is what every skilled cook would justly term soup, a class of food which is a *multum in parvo.* The substantial hodge-podge, or liquid hash of pieces of meat and vegetables stewed together and thickened, hardly comes under the denominatian of soup, but is rather a stew; and it is well that every person who is interested in cookery—and who is not?—should understand the distinction. For a soup should always be looked upon as a light refection, suitable, perhaps, by itself for a sparse luncheon, but never sufficiently substantial for a meal; it is, as has been well said, "the vestibule of the banquet." Whereas the delicious and satisfying stews, which by the way may be made of Australian tinned beef and mutton just as well as of fresh butchers' meat, are better adapted for assuaging hunger consequent upon a long fast, and may well serve as the sole dish of the dinner with those who require one substantial but well flavoured dish, but who do not aspire to two or three courses. The same process in its fundamental principles is adopted for composing a hash as for making a soup; only in the one case the aim is to render the dish a *pièce de resistance*, in the other the skill of the cook is directed towards supplying a considerable amount of delicately-flavoured nourishment in a small bulk. Hence the stew should be a highly-flavoured plat, and the soup a delicately-combined agglomeration of flavours. The late dinner of the rich is never without soup, or fish; but among the middle classes the former is seldom seen, and this is because it is so execrably prepared, that it is rarely liked; and amongst the humbler members of the community it is rarely indulged in, because it requires a certain amount of skill in its preparation, which the poorer classes of this country seldom take the trouble to acquire in the preparation of food of any kind. Soup such as would be consistent with the rich man's sumptuously served table, is essentially of an expensive nature; but such soup as would be welcome at the mid-day meal of the middle classes is not necessarily costly, and such a preparation as would be incalculably agreeable to the palate of the working-

man, might be produced for very little cost. But the one element which must never be wanted is in the two latter cases generally absent, viz., culinary skill. The rich man revels in truffles, but the poor man likes potatoes or onions. The middle-class hard working man has a partiality for roast leg of mutton, but the labouring man would much prefer a leg of pork. It is all very well to talk of refining the tastes of the people; but the lower we descend in the social scale, by so much do our appetites become grosser and our tastes coarser. The nature of soup renders it peculiarly adapted for being preserved in perfect condition for years in tins; and I think that if soup—real, good, strong, carefully-flavoured soup—were offered to the public preserved in this manner, the middle-class dinners would often be found to profit by the addition of an extra course.

But it is unfortunately too well-known a fact that such soups as are sold in tins are not artistically and carefully prepared, and so are seldom experimented upon more than once. It may appear strange that such should be the case, but until some speculative cook, who is a credit to his cloth, shall start a company for the supply of such soup as can be relied upon, I fear the public will continue to look askance upon such things as tinned soups. It is surely a short-sighted policy, on the part of those who have made this branch of the preserved food trade their business, not to aim at the steady patronage of satisfied customers rather than the ephemeral profits accruing from sales to casual consumers of inferior and cheap goods, got up only with regard to tempting appearance.

Soup is an article of food which it is most advantageous and economical to prepare on a large scale. To make a couple of quarts of good soup will, perhaps, cost at the rate of *2s. 6d.* per quart, whereas a hundred quarts may be made of a corresponding quality at the rate of *1s. 6d.* per quart. It is from this circumstance that I venture to assert that a soup-making company employing good cooks would not only be a great boon to the public at large, but a speculation, the success of which would be almost certain, as it could sell soup to consumers at a considerably less cost than they could prepare it in their own kitchens.

An earthenware pot is the best thing in which to make soup in small quantities, but it may be prepared in almost any utensil in use in any kitchen. The digester is also an admirable article for a small household to have in the kitchen for this purpose. I will here venture to suggest that the fault which most people fall into when making soup is being stingy with the vegetables, which they

put into the stock-pot, and so the soup consequently lacks vegetable flavour. Now, as it is an essential condition of good soup that good meat be used in making the stock, so it is also essential that the stock shall be well flavoured with vegetables. I will not allude to the laws of chemistry, which explain the necessary process for making good soup, as this part of my subject may readily be deduced from the works of the great Liebig, and of many other scientific men who have made the chemistry of common life their study. I will, however, give a few practical directions. The meat should be cut up into pieces, the bone should be chopped, the water used should be cold water, and all meat and vegetables used should be raw. The stock-pot should never be allowed to boil rapidly, but should always simmer gently, the scum which will rise should be removed, and the stock-pot should be kept tightly closed. It must always be allowed to simmer for six or eight hours, never less. Violent ebullition should be avoided, as also any disturbance of the stock-pot, and when finished the stock should be drawn off from the materials, or gently poured off. It will be observed that these, the only essential rules to be observed, may easily be carried out by any one in any kitchen; care and attention are the only necessities, and good soup must be the result.

It is characteristic, even of the French male servant of the superior class that he *can*, and what is more to the point *does*, on an emergency cook the dinner, sweep the rooms, and turn his hand to any work aptly and cheerfully, and with alacrity. Now just imagine the blank expression on John Thomas's face if *he* were told to dust the library, or cook the dinner. Of course I know it is a moot point as to whether those nations are not the wisest, who pay but little attention to the luxuries of life. I would ask, however, failing the direction of their energies to such matters, whitherwards do they tend? Is the life of John Thomas so fully occupied that he can never condescend or has no time to make himself generally useful? Is it not a fact that where men servants are employed, much time must hang loosely on their hands? "What will he do with it?" is the question. It would not hurt him to obtain an inkling of cookery in those spare moments, but he never does. Consequently "Satan finds some mischief still for idle hands to do." Our servants, aye and masters too, have much to learn from the French, whose domestic system of service is on a more satisfactory footing than ours.

A Cook.

PRESERVING MEAT.

THE Belgian *Musee de l'Industrie* notes the following methods of preserving meat as the most deserving of attention amongst those communicated to the French Academy of Sciences and published in its *Comptes Rendus* within the last twelve months. 1. M. Baudet's method, by which the meat is kept in water acidulated with carbolic acid in the proportion of one to five parts of acid per thousand of water. A series of experiments proved that all kinds of meat could thus be kept fresh, for lengthened periods, without acquiring any ill taste or odour.

The meat may be placed in barrels or in air-tight tin cases, filled with acidulated water of the strength above specified, and headed up; or the pieces may be packed in barrels or cases in alternate layers with charcoal, pounded small, and saturated with water containing $\frac{5}{1000}$ of carbolic acid. The charcoal serves as a vehicle for the antiseptic fluid, and as an absorbent of any gaseous matters given off by the meat. The latter should be wrapped in thin linen covers to prevent the charcoal working its way into the tissues.

This method, it is suggested, might be employed in curing pork in place of "salting," or of the more lengthy and costly process of "smoking;" and also for the preservation of poultry, game, butter, eggs, etc.

In the case of South American meat, M. Baudet proposes the use of large sacks of caoutchouc. The meat should be packed in them, with alternate layers of charcoal as above described, and each sack, when filled, should be hermetically closed by drawing another empty caoutchouc sack, cap-wise, over it. The caoutchouc, it is supposed, would fetch enough in the market—its low price notwithstanding—to cover expenses of packing and freight, and so permit the meat to be sold in Europe at a very small advance on cost price. If intended for use a second time, the empty bags should be steeped in boiling water for a few minutes, to remove any organic impurities adhering to them.

2. M. Gorge's method, which is in use in La Plata, consists in washing and drying the meat, and afterwards steeping in successive waters containing hydrochloric acid and sulphite of soda, and then packing it in air-tight cases holding one, five, or ten kilog. each. Meat thus treated requires to be soaked in warm water for about half-an-hour before use.

3. M. Leon Soubeiran has recommended braying and drying, in the fashion adopted by the Chinese and Mongols, and described by M. Simon, French Consul in China, in a communication made by him to the *Societé d'Acclimatation*. The *pemmican* of our Arctic voyagers and the *charqui* of South America, are familiar examples of meat preserved by analogous processes. The late M. Payen, a distinguished member of the Academy, insisted upon the great perfection to which this system might be carried by the aid of hot-air stoves and suitable apparatus.

CORRESPONDENCE.

NUTRITION.

To the Editor of the "Food Journal."

SIR,—I have lately seen an article on nutrition, by Mr. E. H. Fournier, claiming to be a synopsis of what Professor Michael Foster suggested and remarked during a course of eleven lectures on this subject. The process of digestion and nutrition, as far as we are acquainted with its natural laws, is imperfectly understood by many who ought to know better; hence such lectures, compilations, and discussions are of the first importance and of great utility, provided they elucidate the subject in a truthful manner, and in accordance with the present state of science. In Mr. Fournier's article there are several assertions which must not pass unnoticed, since they are at variance with physiological facts perfectly established.

1. Alluding to the change of starch into sugar by means of the saliva, Mr. Fournier says :—"Which part of this is the active principle is not as yet known." On the 31st of March, 1845, Mialhe presented a memoir to the French Academy, entitled, "De la Digestion et de l'Assimilation des Matières Sucrées et Amyloides," in which he announced his discovery of the animal diastase in the saliva.

2. "A small quantity of saliva will convert any quantity of starch into sugar." Though diastase acts almost by catalysis, yet it has its limits. Pure diastase may convert into dextrin and grape sugar more than 2,000 parts of starch, but that is all it can do. A small quantity of saliva contains a much smaller quantity of diastase, hence Mr. Fournier's expression is somewhat vague.

3. "Fats are decomposed by a principle in the pancreatic juice not unlike that in diastase. The products are changed into sugar, and hence pass readily into the blood."

There is no special digestive principle for fatty matter as might be inferred by analogy, as regards the digestion of albuminous and starchy food. The alkalies contained in the pancreatic juice and in the liquids of the bile, which neutralise the acid contents of the stomach, cause diastase to become active, at the same time forming an emulsion with the fat, which, without the necessity or possibility of being converted into sugar, passes easily through the intestinal tissue. That the saliva, or rather the salivary glands or mucus membrane of the mouth, is the principal source of diastase, and not the pancreas, is probable for the following reasons :—Saliva is much more copious than the pancreatic juice. The quantity of the former swallowed during and between meals is great, and consequently diastase must be found in the pancreatic juice. Fast eating and toothless people invariably suffer from indigestion on account of the farinaceous food being imperfectly insalivated. Infants before they have teeth cannot digest, because they cannot insalivate farinaceous matter. If the pancreas were the source of diastase, why should this be so ?—I am, Sir, yours obediently,

G. MELLIN.

16, Tichborne Street.

THE PRICE OF BUTCHERS' MEAT.

To the Editor of the "Food Journal."

SIR,—A recent letter of mine published in many of the papers, upon the comparative cost of English and Australian meat, has led to such an amount of correspondence, that I have difficulty in keeping pace with it, and to many who have written me I have to apologise for apparent neglect of their communications.

This all shows, however, very extended interest in the subject; and as many of the letters addressed to me point in the same direction, I should feel obliged by your insertion of a few further remarks.

First as to those who challenge the exact accuracy of my calculations. They say that I was scarcely justified in comparing English roast mutton—costing, as placed upon our plate, nineteen pence per pound, with Australian boiled meat at sixpence or sevenpence.

As the main point, the *nutritive* value, is probably not very different, there might be no great unfairness in such comparison. But I will not contest the point, but will rather quote another little calculation that I have made, the result of which will appear quite fair. I got a half round of beef from the butcher's, had it salted, and the amount of cooked meat carefully compared with the joint in its fresh state with the following results:—

Before salting	13lb.	12oz.
Salted, without bone, uncooked	10	8
After boiling	7	8

So here, again, we find that the loss in bone and cooking makes a probably unexpected difference in the price of our slice of cooked meat. If the raw joint costs us $9\frac{1}{2}d.$ per lb., the boiled meat costs us about $17\frac{1}{4}d.$ per lb. And this we may fairly compare with the boiled imported meat at $6d.$ and $7d.$ per lb. I leave you to judge how many of our people can afford a hearty meal of the latter, who could not afford anything of the kind, as far as the former is concerned.

Many other correspondents ask me where the best meat is to be obtained, and what modes of preparation are most suitable? To this I can only reply, that I do not profess to know the best brands, still less do I write in the interest of any. I do not think that any of the preserved meat, now imported in tins, is otherwise than very good—as, indeed, there is no reason for its being otherwise, the processes of preservation being very simple, and the flocks and herds of the primest stock almost illimitable. The advertising columns of the various papers contain the addresses of the principal agencies, and any respectable retailer will know where to get a perfectly reliable article.

The mode of preparation is very important to many benevolent persons in various directions, who are showing an anxiety to furnish a rather better meal to the crowds of hungry people associated with all our busier centres of industry and population.

During the cold weather, a good hot, highly-seasoned meal, is a very great blessing and comfort to a hard-worked man; and although in my former letter I recommended a plain slice of the cold meat, I quite appreciate the charm of some variety. A little local intelligence, tact, and forethought, may easily secure this in the shape of *pot au feu*, Irish stew, à-la-mode, curries with rice, etc., etc. It does not require very high art to throw in the onion, a little pepper, etc., to give

the necessary flavour to material in which the great element of *nutrition* is already present.

In the increased attention devoted to this meat, some mistakes seem likely to be made as to the classes for whom it is more particularly applicable. It will probably not be readily accepted by domestic servants, usually very well fed, and at the cost of their employers. It is perhaps doubtful how far it is expedient to adopt it too readily in our workhouses and gaols, etc., as original prejudice might soon be aggravated, if it got to be considered as prison food. Those for whom it seems principally adapted, in the first instance, are our hard-worked artisans and labourers generally, who have energetic appetites, and who have to pay for their own food; and the very numerous class of tradesmen, clerks, etc., with incomes varying from 100*l.* to 500*l.* a year, and who have to study real economy in the administration of their households. From these classes the use would gradually extend, upwards and downwards, till we all should become accustomed to consider at each meal whether we were eating meat at 6*d.* per pound or 1*s.* 6*d.*

I am earnest in endeavouring to impress this subject upon public attention, as I believe the extensive use of this article would be in a very high degree blessed in every way. There are millions upon millions of acres in Australia and South America capable of being brought into profitable occupation, or kept in profitable occupation if only the occupants could be reasonably assured of a fair price for their surplus stock. These people are the very best customers that Great Britain has for her manufactures. They are admirable representatives of the most energetic, enterprising, and adventurous of pioneers. They are opening up fresh and varied sources of wealth. And in pouring into our markets vast supplies of wholesome and nutritious animal food at a very moderate rate, a most excellent effect may be produced upon the health and comfort of great numbers of our own people—now, alas! most sadly under-fed.—I am, sir,

Yours obediently,

Reform Club, Nov. 27th, 1871. EDWARD WILSON.

To the Editor of the "Food Journal."

SIR,—By the proceedings of the Finance Committee, Liverpool Town Council, yesterday, it appears that they had thought it desirable not to enter into any contract for the supply of Australian meat to the borough gaol, but that supplies should be purchased from time to time, at the discretion of the governor. It was mentioned that some time ago it was suggested that if Australian preserved meat were introduced into the gaol a considerable saving would be effected. The matter was discussed, samples were sent in, and the committee sanctioned that being done. The result, it is believed, would be that out of 1,500*l.* per annum for meat, 750*l.* would be saved by the introduction of Australian meat, and the governor of the gaol states that the prisoners liked it better than English beef or mutton.—Yours obediently,

Liverpool, Dec. 7, 1871. W. WHITTHREAD.

DOMESTIC RECIPES.

The Editor desires to appeal to his readers, and especially to the ladies, for contributions of recipes for cheap, tasty, and serviceable dishes, both for poor households and those of the higher classes.

ADELAIDE PUDDING.

Take 6 oz. of butter, 6 oz. sifted sugar, and beat them together; then add one tablespoonful of ground rice, and the yolks of six eggs. This will make six puddings. Put apricot juice, or the half of a large apricot (that has been preserved whole) at the bottom of the cups. Then fill the cups half full, bake for half-an-hour in a slow oven, at the end of which time the puddings ought to rise to the top of the cups. Send them to table turned out of the cups, with the apricot at the top.

INDIAN-CORN CAKE.

Mix together $\frac{1}{4}$ lb. fine flour and $\frac{1}{4}$ lb. Indian meal (not corn flour); rub into it 2 oz. butter; add a small pinch of salt, and a tablespoonful of white sugar. Beat an egg (yolk and white together) in a teacup, then fill up the cup with cold skimmed milk, pour it into the meal and beat it up. Dissolve half a teaspoonful of bicarbonate of soda in a little drop of milk, and beat it into the mixture, which should then be a wettish paste. If too dry, a little more milk may be added. Bake in roll tins or mince-pie tins in a moderately quick oven for nearly half-an-hour, or till quite brown.

TOMATOES AU GRATIN.

"Take eight tomatoes, 2 inches in diameter, pare off the skin round the stalk, and make an opening 1 inch in diameter in the tomatoes, to allow of taking out the seeds with the handle of a teaspoon; season with two pinches of salt, and two small pinches of pepper. Prepare some fine herb stuffing as follows:—Put in a quart stewpan 1 oz. of butter and $\frac{1}{2}$ oz. of flour; stir over the fire for two minutes; then add 1 pint of broth; stir, till reduced to half the quantity; and put in three tablespoonfuls of chopped and washed parsley, one tablespoonful of chopped and washed shalot, two pinches of salt, one small pinch of pepper; reduce on a brisk fire for eight minutes."—W. D. TEGETMEIER, in the *Garden*.

FISH AND SAUCE.

In some parts of Scotland a dish called fish and sauce is very common, and when properly prepared, is an excellent one; but it is not often prepared in the best possible way. The following method will yield a most satisfactory result. Take the requisite number of fresh haddocks, clean them, cut off the heads, tails, and fins. Boil the heads, tails, and fins thoroughly, to make stock for the dish. After they are boiled, pass the contents of the basin through a drainer, throw away what is left in the drainer, and return the soup or stock which passes through it to the basin along with the haddocks cut into small pieces; adding a little chopped parsley, a little flour mixed with cold water, a little butter, salt, and pepper. When sufficiently boiled, this is a most palatable dish; much better than can be produced in the way more frequently practised of throwing away the heads, tails, and fins of the fish, and boiling simply in water.

NOTES OF THE MONTH.

The one absorbing topic of the month has been the illness of his Royal Highness the Prince of Wales, whose life, so precious and dear to the English nation, has been hanging for days by a thread. From the uttermost parts of the earth accounts have been received, expressing the greatest sympathy with us in our tribulation, and it is not too much to say that from the highest to the lowest in this country, was there an universal feeling of anxiety and grief during the crisis of the disease, and as universal a feeling of thankfulness when the crisis was past, and we were bid to hope again. Nobody in Great Britain will soon forget the first dreary fortnight of December, 1871, and we trust that a deep and abiding lesson will have been given us, not to trifle any longer with those great truths of sanitary science which we know so well, but practice so little. Now that the heir to the throne has been struck down by our deadliest enemy, and has so narrowly escaped, it is not too much to expect that even our legislature will be roused from its apathy, and will prepare during the coming session to deal in a sound and comprehensive manner with the great sanitary chaos of the day. Thousands of people have been sacrificed to this neglect, and millions of money have been wasted; and one would have thought that the latter argument would have ere this compelled attention, even though the former had no effect. There are probably very few houses in the Kingdom which are not in as bad, and perhaps a worse state than Londesborough Lodge, and still fewer heads of families who have the slightest idea of the deadly poisons that are ever seeking to enter the dwelling, or of the means at their disposal to control them. "Cleanliness is next to godliness" is a text which we are very fond of quoting, but for all that, our cleanliness is like the whitened platter, and we take but little heed of the volcanoes over which we daily live.

A meeting was held on Monday, Dec. 18, at the Cannon Street Hotel, under the presidency of Mr. Edward Wilson, of Hayes, to devise some method of utilising the great impetus which has lately been given to the sale of preserved meat, and thus make it of practical benefit to the country at large, and particularly the poorer classes. Individual example is all very well, and much may be done in this way, but to supply what is really a national want requires a more systematic organisation and combined efforts. We believe that a great and good time is coming for England as regarding food supplies, and it is the duty of all who are interested in their poorer neighbours to hasten this time.

A New Liqueur.—We have been favoured by Messrs. Ross and Cameron with a sample of a new liqueur, introduced by them as the "Scotch Tonic Liqueur." The base of the beverage is evidently very old and strong Scotch whisky, and the bitter and flavouring matters being very excellently blended, the effect produced is exceedingly agreeable. We have rarely tasted a liqueur so calculated to promote the appetite, and it has only to become known to soon supersede the usual "sherry and bitters" before dinner. Our analyst states that the ingredients are quite wholesome, and calculated to produce a good tonic effect on the stomach.

THE past month has been prolific in food undertakings, two of which, on a large scale, have been brought before the public. The Food Preserving Company proposes to operate under Richard Jones' vacuum system, claiming, as the special feature, that poultry, game, fish, and whole joints of beef and mutton, chops or steaks, can be as readily preserved with as without bone, thus obviating the hitherto unsatisfactory appearance of preserved meat, and this, it is believed, can be done at a profit, with the sale price at only 6*d.* per lb. The River Plate Pressure Meat Preserving Company work on a patent of Mr. T. F. Henley. It is intended to combine the processes of obtaining meat extract or essence, and that of tinning the meat after it has been subjected to pressure. The patentee believes that by so doing the fibre of the meat is preserved and the albuminous and extractive principles retained. Taking all things into consideration, we are disposed to think that of all the numberless projects now in the money market, food preserving schemes offer the best chance of success.

In a recent article in the *John Bull*, a very sensible suggestion was made apropos of the high price of butchers' meat, viz., that game should be occasionally substituted for it, and particularly in small households. Few people realise the fact that when game is tolerably plentiful, as it has lately been, it is as cheap as meat and quite as nutritious, besides affording a very pleasant change. We have tried the experiment with great satisfaction. A plump brace of birds at 6*s.* went quite as far as the same number of pounds of meat, and was capable of affording a greater variety of dishes. If mistresses of households would have more boldness in leaving the beaten track, when they order dinner, they would be surprised to find how many little niceties would develope themselves, and how much less the housekeeping bills would be.

ACCOUNTS from Newfoundland speak of great present prosperity. The capture of the almost fabulous number of 600,000 seals in the spring of this year, and a most successful cod fishery, have been followed by the reappearance of mackerel on the coast after an absence of forty years. Money, too, appears to be abundant, the local banks having reduced the rate of interest, and paying dividends of from 8 to 12 per cent., with bonuses in addition.

A ROYAL FEAST.—The bill of fare for the coronation feast of King George the Fourth on the 19th July, 1821, comprised 7,442 lb. of beef, 7,133 of veal, 2,474 of mutton, 250 of suet, 1,730 of bacon, 550 of lard, 912 of butter, 20 quarters of house lamb, 20 legs of house lamb, 5 saddles of lamb, 55 quarters of grass lamb, 166 lambs' sweetbreads, 389 cow-heels, 400 calves' feet, 160 geese, 720 pullets and capons, 1,610 chickens, 520 fowls, 8,400 eggs, 160 tureens of soup, 166 dishes of fish, 80 of venison, 160 of vegetables, 640 of pastry, 400 of creams and jellies, 160 of shellfish, and 480 boats of sauce. 100 dozen of Champagne, 20 of Burgundy, 200 of claret, 50 of hock, 50 of Moselle, 50 of Madeira, and 350 of port and sherry, were provided, with 100 gallons of iced punch and 100 barrels of ale and porter. The number of dinner plates was 6,794, of soup plates 1,405, and of dessert plates 1,499. There seem to have been 310 guests at this banquet.

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